

## Sequence Listing

<110> Shen Zhen Tsinghua Yuanxing Bio-Pharm Science & Technology Co., Ltd.

<120> Anti-Tumor Molecular Vaccine and Method of making thereof

<130> CGCNS31755

<150> CN02159602.6

<151> 2002-12-27

<160> 27

<170> PatentIn version 3.1

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<211> 3633

<212> DNA

<213> H<sub>2</sub>O(homo sapiens)

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<221> CDS

<222> (1)..(3630)

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ggc	acg	agt	aac	aag	ctc	acg	cag	ttg	ggc	act	ttt	gaa	gat	cat	ttt	144
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Gly	Thr	Ser	Asn	Lys	Leu	Thr	Gln	Leu	Gly	Thr	Phe	Glu	Asp	His	Phe		
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Thr	Gly	Pro	Arg	Glu	Ser	Asp	Cys	Leu	Val	Cys	Arg	Lys	Phe	Arg	Asp		
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gaa	gcc	acg	tgc	aag	gac	acc	tgc	ccc	cca	ctc	atg	ctc	tac	aac	ccc	816	
Glu	Ala	Thr	Cys	Lys	Asp	Thr	Cys	Pro	Pro	Leu	Met	Leu	Tyr	Asn	Pro		

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Thr	Thr	Tyr	Gln	Met	Asp	Val	Asn	Pro	Glu	Gly	Lys	Tyr	Ser	Phe	Gly												
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Phe	Arg	Glu	Leu	Ile	Ile	Glu	Phe	Ser	Lys	Met	Ala	Arg	Asp	Pro	Gln		
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cgc	tac	ctt	gtc	att	cag	ggg	gat	gaa	aga	atg	cat	ttg	cca	agt	cct		2976
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35 40 45

Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn
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Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys
65 70 75 80

Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val
85 90 95

Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr
100 105 110

Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn
115 120 125

Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu  
130 135 140

His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu  
145 150 155 160

Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met  
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Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro  
180 185 190

Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln  
195 200 205

Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg  
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Gly Lys Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys  
225 230 235 240

Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp  
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Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro  
260 265 270

Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly  
275 280 285

Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His  
290 295 300

Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr Glu Met Glu Glu  
305 310 315 320

Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro Cys Arg Lys Val  
325 330 335

Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn  
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Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp  
355 360 365

Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr  
370 375 380

Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu  
385 390 395 400

Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Glu Asn Arg Thr Asp  
405 410 415

Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln  
420 425 430

His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn Ile Thr Ser Leu  
435 440 445

Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser  
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Gly Asn Lys Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu  
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Phe Gly Thr Ser Gly Gln Lys Thr Lys Ile Ile Ser Asn Arg Gly Glu  
485 490 495

Asn Ser Cys Lys Ala Thr Gly Gln Val Cys His Ala Leu Cys Ser Pro  
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Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val  
580 585 590

Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn Thr Leu Val Trp  
595 600 605

Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys  
610 615 620

Thr Tyr Gly Cys Thr Gly Pro Gly Leu Glu Gly Cys Pro Thr Asn Gly  
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Pro Lys Ile Pro Ser Ile Ala Thr Gly Met Val Gly Ala Leu Leu Leu  
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Leu Leu Val Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg Arg His  
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Ile Val Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg Glu Leu  
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Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala Leu Leu  
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Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu Gly Ser  
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Gly Ala Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu Gly Glu  
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Lys Val Lys Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala Thr Ser  
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Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Ser  
755 760 765

Val Asp Asn Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu Thr Ser  
770 775 780

Thr Val Gln Leu Ile Thr Gln Leu Met Pro Phe Gly Cys Leu Leu Asp  
785 790 795 800

Tyr Val Arg Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu Leu Asn

805

810

815

Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp Arg Arg  
 820 825 830

Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Thr Pro  
 835 840 845

Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu Gly Ala  
 850 855 860

Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile Lys Trp  
 865 870 875 880

Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln Ser Asp  
 885 890 895

Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ser  
 900 905 910

Lys Pro Tyr Asp Gly Ile Pro Ala Ser Glu Ile Ser Ser Ile Leu Glu  
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Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr  
 930 935 940

Met Ile Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys  
 945 950 955 960

Phe Arg Glu Leu Ile Ile Glu Phe Ser Lys Met Ala Arg Asp Pro Gln  
 965 970 975

Arg Tyr Leu Val Ile Gln Gly Asp Glu Arg Met His Leu Pro Ser Pro  
 980 985 990

Thr Asp Ser Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp Met Asp  
 995 1000 1005

Asp Val Val Asp Ala Asp Glu Tyr Leu Ile Pro Gln Gln Gly Phe  
 1010 1015 1020

Phe Ser Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser Ser Leu  
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Ser Ala Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asp Arg Asn  
1040 1045 1050

Gly Leu Gln Ser Cys Pro Ile Lys Glu Asp Ser Phe Leu Gln Arg  
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Tyr Ser Ser Asp Pro Thr Gly Ala Leu Thr Glu Asp Ser Ile Asp  
1070 1075 1080

Asp Thr Phe Leu Pro Val Pro Glu Tyr Ile Asn Gln Ser Val Pro  
1085 1090 1095

Lys Arg Pro Ala Gly Ser Val Gln Asn Pro Val Tyr His Asn Gln  
1100 1105 1110

Pro Leu Asn Pro Ala Pro Ser Arg Asp Pro His Tyr Gln Asp Pro  
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His Ser Thr Ala Val Gly Asn Pro Glu Tyr Leu Asn Thr Val Gln  
1130 1135 1140

Pro Thr Cys Val Asn Ser Thr Phe Asp Ser Pro Ala His Trp Ala  
1145 1150 1155

Gln Lys Gly Ser His Gln Ile Ser Leu Asp Asn Pro Asp Tyr Gln  
1160 1165 1170

Gln Asp Phe Phe Pro Lys Glu Ala Lys Pro Asn Gly Ile Phe Lys  
1175 1180 1185

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<211> 1974

<212> DNA

<213> Human(homo sapiens)

<220>

<221> CDS

<222> (1)..(1971)

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gcg ctc tgc ccg gcg agt cgg gct ctg gag gaa aag aaa gtt tgc caa	96
Ala Leu Cys Pro Ala Ser Arg Ala Leu Glu Glu Lys Lys Val Cys Gln	
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ggc acg agt aac aag ctc acg cag ttg ggc act ttt gaa gat cat ttt	144
Gly Thr Ser Asn Lys Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe	
35 40 45	
ctc agc ctc cag agg atg ttc aat aac tgt gag gtg gtc ctt ggg aat	192
Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn	
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ttg gaa att acc tat gtg cag agg aat tat gat ctt tcc ttc tta aag	240
Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys	
65 70 75 80	
acc atc cag gag gtg gct ggt tat gtc ctc att gcc ctc aac aca gtg	288
Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val	
85 90 95	
gag cga att cct ttg gaa aac ctg cag atc atc aga gga aat atg tac	336
Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr	
100 105 110	
tac gaa aat tcc tat gcc tta gca gtc tta tct aac tat gat gca aat	384
Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn	
115 120 125	
aaa acc gga ctg aag gag ctg ccc atg aga aat tta cag gaa atc ctg	432
Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu	
130 135 140	
cat ggc gcc gtg cgg ttc agc aac aac cct gcc ctg tgc aac gtg gag	480
His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu	
145 150 155 160	
agc atc cag tgg cgg gac ata gtc agc agt gac ttt ctc agc aac atg	528
Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met	
165 170 175	

tcg atg gac ttc cag aac cac ctg ggc agc tgc caa aag tgt gat cca Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro 180 185 190	576
agc tgt ccc aat ggg agc tgc tgg ggt gca gga gag gag aac tgc cag Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln 195 200 205	624
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aca ggc ccc cgg gag agc gac tgc ctg gtc tgc cgc aaa ttc cga gac Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp 245 250 255	768
gaa gcc acg tgc aag gac acc tgc ccc cca ctc atg ctc tac aac ccc Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro 260 265 270	816
acc acg tac cag atg gat gtg aac ccc gag ggc aaa tac agc ttt ggt Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly 275 280 285	864
gcc acc tgc gtg aag aag tgt ccc cgt aat tat gtg gtg aca gat cac Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His 290 295 300	912
ggc tcg tgc gtc cga gcc tgt ggg gcc gac agc tat gag atg gag gaa Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr Glu Met Glu Glu 305 310 315 320	960
gac ggc gtc cgc aag tgt aag aag tgc gaa ggg cct tgc cgc aaa gtg Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro Cys Arg Lys Val 325 330 335	1008
tgt aac gga ata ggt att ggt gaa ttt aaa gac tca ctc tcc ata aat Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn 340 345 350	1056
gct acg aat att aaa cac ttc aaa aac tgc acc tcc atc agt ggc gat Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp 355 360 365	1104
ctc cac atc ctg ccg gtg gca ttt agg ggt gac tcc ttc aca cat act Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr 370 375 380	1152
cct cct ctg gat cca cag gaa ctg gat att ctg aaa acc gta aag gaa Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu 385 390 395 400	1200

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cat ggt cag ttt tct ctt gca gtc gtc agc ctg aac ata aca tcc ttg His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn Ile Thr Ser Leu 435 440 445	1344
gga tta cgc tcc ctc aag gag ata agt gat gga gat gtg ata att tca Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser 450 455 460	1392
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aac agc tgc aag gcc aca ggc cag gtc tgc cat gcc ttg tgc tcc ccc Asn Ser Cys Lys Ala Thr Gly Gln Val Cys His Ala Leu Cys Ser Pro 500 505 510	1536
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gtc agc cga ggc agg gaa tgc gtg gac aag tgc aac ctt ctg gag ggt Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn Leu Leu Glu Gly 530 535 540	1632
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gac aac tgt atc cag tgt gcc cac tac att gac ggc ccc cac tgc gtc Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val 580 585 590	1776
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aag tac gca gac gcc ggc cat gtg tgc cac ctg tgc cat cca aac tgc Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys 610 615 620	1872
acc tac gga tgc act ggg cca ggt ctt gaa ggc tgt cca acg aat gga	1920

Thr Tyr Gly Cys Thr Gly Pro Gly Leu Glu Gly Cys Pro Thr Asn Gly  
 625 630 635 640

agc tac ata gtg tct cac ttt cca aga tca ttc tac aag atg tca gtg 1968  
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 645 650 655

cac tga 1974  
 His

<210> 4

<211> 657

<212> PRT

<213> Human homo sapiens)

<400> 4

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Gly Thr Ser Asn Lys Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe  
 35 40 45

Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn  
 50 55 60

Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys  
 65 70 75 80

Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val  
 85 90 95

Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr  
 100 105 110

Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn  
 115 120 125

Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu



130					135					140					
His 145	Gly	Ala	Val	Arg	Phe 150	Ser	Asn	Asn	Pro	Ala 155	Leu	Cys	Asn	Val	Glu 160
Ser	Ile	Gln	Trp	Arg 165	Asp	Ile	Val	Ser	Ser 170	Asp	Phe	Leu	Ser	Asn 175	Met
Ser	Met	Asp	Phe 180	Gln	Asn	His	Leu	Gly 185	Ser	Cys	Gln	Lys	Cys 190	Asp	Pro
Ser	Cys	Pro 195	Asn	Gly	Ser	Cys	Trp 200	Gly	Ala	Gly	Glu	Glu 205	Asn	Cys	Gln
Lys 210	Leu	Thr	Lys	Ile	Ile	Cys 215	Ala	Gln	Gln	Cys	Ser 220	Gly	Arg	Cys	Arg
Gly 225	Lys	Ser	Pro	Ser	Asp 230	Cys	Cys	His	Asn	Gln 235	Cys	Ala	Ala	Gly	Cys 240
Thr	Gly	Pro	Arg	Glu 245	Ser	Asp	Cys	Leu	Val 250	Cys	Arg	Lys	Phe	Arg 255	Asp
Glu	Ala	Thr	Cys 260	Lys	Asp	Thr	Cys	Pro 265	Pro	Leu	Met	Leu	Tyr 270	Asn	Pro
Thr	Thr	Tyr 275	Gln	Met	Asp	Val	Asn 280	Pro	Glu	Gly	Lys	Tyr 285	Ser	Phe	Gly
Ala	Thr 290	Cys	Val	Lys	Lys	Cys 295	Pro	Arg	Asn	Tyr	Val 300	Val	Thr	Asp	His
Gly 305	Ser	Cys	Val	Arg	Ala 310	Cys	Gly	Ala	Asp	Ser 315	Tyr	Glu	Met	Glu	Glu 320
Asp	Gly	Val	Arg	Lys 325	Cys	Lys	Lys	Cys	Glu 330	Gly	Pro	Cys	Arg	Lys 335	Val
Cys	Asn	Gly	Ile 340	Gly	Ile	Gly	Glu	Phe 345	Lys	Asp	Ser	Leu	Ser 350	Ile	Asn
Ala	Thr	Asn 355	Ile	Lys	His	Phe	Lys 360	Asn	Cys	Thr	Ser	Ile 365	Ser	Gly	Asp

Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr  
370 375 380

Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu  
385 390 395 400

Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Glu Asn Arg Thr Asp  
405 410 415

Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln  
420 425 430

His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn Ile Thr Ser Leu  
435 440 445

Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser  
450 455 460

Gly Asn Lys Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu  
465 470 475 480

Phe Gly Thr Ser Gly Gln Lys Thr Lys Ile Ile Ser Asn Arg Gly Glu  
485 490 495

Asn Ser Cys Lys Ala Thr Gly Gln Val Cys His Ala Leu Cys Ser Pro  
500 505 510

Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Arg Asn  
515 520 525

Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn Leu Leu Glu Gly  
530 535 540

Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro  
545 550 555 560

Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro  
565 570 575

Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val  
580 585 590

Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn Thr Leu Val Trp  
595 600 605

Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys  
610 615 620

Thr Tyr Gly Cys Thr Gly Pro Gly Leu Glu Gly Cys Pro Thr Asn Gly  
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Ser Tyr Ile Val Ser His Phe Pro Arg Ser Phe Tyr Lys Met Ser Val  
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His

<210> 5

<211> 2118

<212> DNA

<213> Human(homo sapiens)

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<221> CDS

<222> (1)..(2115)

<223>

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1				5				10						15		

gcg	ctc	tgc	ccg	gcg	agt	cgg	gct	ctg	gag	gaa	aag	aaa	gtt	tgc	caa	96
Ala	Leu	Cys	Pro	Ala	Ser	Arg	Ala	Leu	Glu	Glu	Lys	Lys	Val	Cys	Gln	
			20					25					30			

ggc	acg	agt	aac	aag	ctc	acg	cag	ttg	ggc	act	ttt	gaa	gat	cat	ttt	144
Gly	Thr	Ser	Asn	Lys	Leu	Thr	Gln	Leu	Gly	Thr	Phe	Glu	Asp	His	Phe	
		35					40					45				

ctc	agc	ctc	cag	agg	atg	ttc	aat	aac	tgt	gag	gtg	gtc	ctt	ggg	aat	192
Leu	Ser	Leu	Gln	Arg	Met	Phe	Asn	Asn	Cys	Glu	Val	Val	Leu	Gly	Asn	
		50				55					60					

ttg gaa att acc tat gtg cag agg aat tat gat ctt tcc ttc tta aag	240
Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys	
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acc atc cag gag gtg gct ggt tat gtc ctc att gcc ctc aac aca gtg	288
Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val	
85 90 95	
gag cga att cct ttg gaa aac ctg cag atc atc aga gga aat atg tac	336
Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr	
100 105 110	
tac gaa aat tcc tat gcc tta gca gtc tta tct aac tat gat gca aat	384
Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn	
115 120 125	
aaa acc gga ctg aag gag ctg ccc atg aga aat tta cag gaa atc ctg	432
Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu	
130 135 140	
cat ggc gcc gtg cgg ttc agc aac aac cct gcc ctg tgc aac gtg gag	480
His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu	
145 150 155 160	
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Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met	
165 170 175	
tcg atg gac ttc cag aac cac ctg ggc agc tgc caa aag tgt gat cca	576
Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro	
180 185 190	
agc tgt ccc aat ggg agc tgc tgg ggt gca gga gag gag aac tgc cag	624
Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln	
195 200 205	
aaa ctg acc aaa atc atc tgt gcc cag cag tgc tcc ggg cgc tgc cgt	672
Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg	
210 215 220	
ggc aag tcc ccc agt gac tgc tgc cac aac cag tgt gct gca ggc tgc	720
Gly Lys Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys	
225 230 235 240	
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Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp	
245 250 255	
gaa gcc acg tgc aag gac acc tgc ccc cca ctc atg ctc tac aac ccc	816
Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro	
260 265 270	
acc acg tac cag atg gat gtg aac ccc gag ggc aaa tac agc ttt ggt	864
Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly	
275 280 285	

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ggc tcg tgc gtc cga gcc tgt ggg gcc gac agc tat gag atg gag gaa Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr Glu Met Glu Glu 305 310 315 320	960
gac ggc gtc cgc aag tgt aag aag tgc gaa ggg cct tgc cgc aaa gtg Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro Cys Arg Lys Val 325 330 335	1008
tgt aac gga ata ggt att ggt gaa ttt aaa gac tca ctc tcc ata aat Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn 340 345 350	1056
gct acg aat att aaa cac ttc aaa aac tgc acc tcc atc agt ggc gat Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp 355 360 365	1104
ctc cac atc ctg ccg gtg gca ttt agg ggt gac tcc ttc aca cat act Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr 370 375 380	1152
cct cct ctg gat cca cag gaa ctg gat att ctg aaa acc gta aag gaa Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu 385 390 395 400	1200
atc aca ggg ttt ttg ctg att cag gct tgg cct gaa aac agg acg gac Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Glu Asn Arg Thr Asp 405 410 415	1248
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cat ggt cag ttt tct ctt gca gtc gtc agc ctg aac ata aca tcc ttg His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn Ile Thr Ser Leu 435 440 445	1344
gga tta cgc tcc ctc aag gag ata agt gat gga gat gtg ata att tca Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser 450 455 460	1392
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Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Arg Asn	
515 520 525	
gtc agc cga ggc agg gaa tgc gtg gac aag tgc aac ctt ctg gag ggt	1632
Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn Leu Leu Glu Gly	
530 535 540	
gag cca agg gag ttt gtg gag aac tct gag tgc ata cag tgc cac cca	1680
Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro	
545 550 555 560	
gag tgc ctg cct cag gcc atg aac atc acc tgc aca gga cgg gga cca	1728
Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro	
565 570 575	
gac aac tgt atc cag tgt gcc cac tac att gac ggc ccc cac tgc gtc	1776
Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val	
580 585 590	
aag acc tgc ccg gca gga gtc atg gga gaa aac aac acc ctg gtc tgg	1824
Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn Thr Leu Val Trp	
595 600 605	
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Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys	
610 615 620	
acc tac ggg cca gga aat gag agt ctc aaa gcc atg tta ttc tgc ctt	1920
Thr Tyr Gly Pro Gly Asn Glu Ser Leu Lys Ala Met Leu Phe Cys Leu	
625 630 635 640	
ttt aaa cta tca tcc tgt aat caa agt aat gat ggc agc gtg tcc cac	1968
Phe Lys Leu Ser Ser Cys Asn Gln Ser Asn Asp Gly Ser Val Ser His	
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Gln Ser Gly Ser Pro Ala Ala Gln Glu Ser Cys Leu Gly Trp Ile Pro	
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tct ctt ctg ccg tca gag ttt cag ctg ggt tgg ggt gga tgc agc cac	2064
Ser Leu Leu Pro Ser Glu Phe Gln Leu Gly Trp Gly Gly Cys Ser His	
675 680 685	
ctc cat gcc tgg cct tct gca tct gtg atc atc acg gcc tcc tcc tgc	2112
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cac tga	2118
His	
705	

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<211> 705

<212> PRT

<213> Human(homo sapiens)

<400> 6

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35 40 45

Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn  
50 55 60

Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys  
65 70 75 80

Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val  
85 90 95

Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr  
100 105 110

Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn  
115 120 125

Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu  
130 135 140

His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu  
145 150 155 160

Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met  
165 170 175

Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro  
180 185 190

Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln  
195 200 205

Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg  
210 215 220

Gly Lys Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys  
225 230 235 240

Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp  
245 250 255

Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro  
260 265 270

Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly  
275 280 285

Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His  
290 295 300

Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr Glu Met Glu Glu  
305 310 315 320

Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro Cys Arg Lys Val  
325 330 335

Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn  
340 345 350

Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp  
355 360 365

Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr  
370 375 380

Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu  
385 390 395 400

Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Glu Asn Arg Thr Asp  
405 410 415

Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln  
420 425 430



His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn Ile Thr Ser Leu  
435 440 445

Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser  
450 455 460

Gly Asn Lys Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu  
465 470 475 480

Phe Gly Thr Ser Gly Gln Lys Thr Lys Ile Ile Ser Asn Arg Gly Glu  
485 490 495

Asn Ser Cys Lys Ala Thr Gly Gln Val Cys His Ala Leu Cys Ser Pro  
500 505 510

Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Arg Asn  
515 520 525

Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn Leu Leu Glu Gly  
530 535 540

Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro  
545 550 555 560

Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro  
565 570 575

Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val  
580 585 590

Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn Thr Leu Val Trp  
595 600 605

Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys  
610 615 620

Thr Tyr Gly Pro Gly Asn Glu Ser Leu Lys Ala Met Leu Phe Cys Leu  
625 630 635 640

Phe Lys Leu Ser Ser Cys Asn Gln Ser Asn Asp Gly Ser Val Ser His  
645 650 655

Gln Ser Gly Ser Pro Ala Ala Gln Glu Ser Cys Leu Gly Trp Ile Pro  
660 665 670

Ser Leu Leu Pro Ser Glu Phe Gln Leu Gly Trp Gly Gly Cys Ser His  
675 680 685

Leu His Ala Trp Pro Ser Ala Ser Val Ile Ile Thr Ala Ser Ser Cys  
690 695 700

His  
705

<210> 7

<211> 1887

<212> DNA

<213> Human homo sapiens)

<220>

<221> CDS

<222> (1)..(1884)

<223>

<400> 7

atg	cga	ccc	tcc	ggg	acg	gcc	ggg	gca	gcg	ctc	ctg	gcg	ctg	ctg	gct	48
Met	Arg	Pro	Ser	Gly	Thr	Ala	Gly	Ala	Ala	Leu	Leu	Ala	Leu	Leu	Ala	
1				5				10					15			

gcg	ctc	tgc	ccg	gcg	agt	cgg	gct	ctg	gag	gaa	aag	aaa	gtt	tgc	caa	96
Ala	Leu	Cys	Pro	Ala	Ser	Arg	Ala	Leu	Glu	Glu	Lys	Lys	Val	Cys	Gln	
			20					25					30			

ggc	acg	agt	aac	aag	ctc	acg	cag	ttg	ggc	act	ttt	gaa	gat	cat	ttt	144
Gly	Thr	Ser	Asn	Lys	Leu	Thr	Gln	Leu	Gly	Thr	Phe	Glu	Asp	His	Phe	
		35					40					45				

ctc	agc	ctc	cag	agg	atg	ttc	aat	aac	tgt	gag	gtg	gtc	ctt	ggg	aat	192
Leu	Ser	Leu	Gln	Arg	Met	Phe	Asn	Asn	Cys	Glu	Val	Val	Leu	Gly	Asn	
		50				55					60					

ttg	gaa	att	acc	tat	gtg	cag	agg	aat	tat	gat	ctt	tcc	ttc	tta	aag	240
Leu	Glu	Ile	Thr	Tyr	Val	Gln	Arg	Asn	Tyr	Asp	Leu	Ser	Phe	Leu	Lys	
65					70					75					80	

acc atc cag gag gtg gct ggt tat gtc ctc att gcc ctc aac aca gtg	288
Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val	
85 90 95	
gag cga att cct ttg gaa aac ctg cag atc atc aga gga aat atg tac	336
Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr	
100 105 110	
tac gaa aat tcc tat gcc tta gca gtc tta tct aac tat gat gca aat	384
Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn	
115 120 125	
aaa acc gga ctg aag gag ctg ccc atg aga aat tta cag gaa atc ctg	432
Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu	
130 135 140	
cat ggc gcc gtg cgg ttc agc aac aac cct gcc ctg tgc aac gtg gag	480
His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu	
145 150 155 160	
agc atc cag tgg cgg gac ata gtc agc agt gac ttt ctc agc aac atg	528
Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met	
165 170 175	
tcg atg gac ttc cag aac cac ctg ggc agc tgc caa aag tgt gat cca	576
Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro	
180 185 190	
agc tgt ccc aat ggg agc tgc tgg ggt gca gga gag gag aac tgc cag	624
Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln	
195 200 205	
aaa ctg acc aaa atc atc tgt gcc cag cag tgc tcc ggg cgc tgc cgt	672
Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg	
210 215 220	
ggc aag tcc ccc agt gac tgc tgc cac aac cag tgt gct gca ggc tgc	720
Gly Lys Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys	
225 230 235 240	
aca ggc ccc cgg gag agc gac tgc ctg gtc tgc cgc aaa ttc cga gac	768
Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp	
245 250 255	
gaa gcc acg tgc aag gac acc tgc ccc cca ctc atg ctc tac aac ccc	816
Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro	
260 265 270	
acc acg tac cag atg gat gtg aac ccc gag ggc aaa tac agc ttt ggt	864
Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly	
275 280 285	
gcc acc tgc gtg aag aag tgt ccc cgt aat tat gtg gtg aca gat cac	912
Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His	
290 295 300	
ggc tcg tgc gtc cga gcc tgt ggg gcc gac agc tat gag atg gag gaa	960

Gly 305	Ser	Cys	Val	Arg	Ala 310	Cys	Gly	Ala	Asp	Ser 315	Tyr	Glu	Met	Glu	Glu 320	
gac Asp	ggc Gly	gtc Val	cgc Arg	aag Lys	tgt Cys	aag Lys	aag Lys	tgc Cys	gaa Glu	ggg Gly	cct Pro	tgc Cys	cgc Arg	aaa Lys	gtg Val	1008
				325					330					335		
tgt Cys	aac Asn	gga Gly	ata Ile	ggt Gly	att Ile	ggt Gly	gaa Glu	ttt Phe	aaa Lys	gac Asp	tca Ser	ctc Leu	tcc Ser	ata Ile	aat Asn	1056
			340				345						350			
gct Ala	acg Thr	aat Asn	att Ile	aaa Lys	cac His	ttc Phe	aaa Lys	aac Asn	tgc Cys	acc Thr	tcc Ser	atc Ile	agt Ser	ggc Gly	gat Asp	1104
		355					360					365				
ctc Leu	cac His	atc Ile	ctg Leu	ccg Pro	gtg Val	gca Ala	ttt Phe	agg Arg	ggg Gly	gac Asp	tcc Ser	ttc Phe	aca Thr	cat His	act Thr	1152
		370				375					380					
cct Pro	cct Pro	ctg Leu	gat Asp	cca Pro	cag Gln	gaa Glu	ctg Leu	gat Asp	att Ile	ctg Leu	aaa Lys	acc Thr	gta Val	aag Lys	gaa Glu	1200
385					390					395					400	
atc Ile	aca Thr	ggg Gly	ttt Phe	ttg Leu	ctg Leu	att Ile	cag Gln	gct Ala	tgg Trp	cct Pro	gaa Glu	aac Asn	agg Arg	acg Thr	gac Asp	1248
				405					410					415		
ctc Leu	cat His	gcc Ala	ttt Phe	gag Glu	aac Asn	cta Leu	gaa Glu	atc Ile	ata Ile	cgc Arg	ggc Gly	agg Arg	acc Thr	aag Lys	caa Gln	1296
			420				425						430			
cat His	ggg Gly	cag Gln	ttt Phe	tct Ser	ctt Leu	gca Ala	gtc Val	gtc Val	agc Ser	ctg Leu	aac Asn	ata Ile	aca Thr	tcc Ser	ttg Leu	1344
		435					440					445				
gga Gly	tta Leu	cgc Arg	tcc Ser	ctc Leu	aag Lys	gag Glu	ata Ile	agt Ser	gat Asp	gga Gly	gat Asp	gtg Val	ata Ile	att Ile	tca Ser	1392
	450					455				460						
gga Gly	aac Asn	aaa Lys	aat Asn	ttg Leu	tgc Cys	tat Tyr	gca Ala	aat Asn	aca Thr	ata Ile	aac Asn	tgg Trp	aaa Lys	aaa Lys	ctg Leu	1440
465				470						475					480	
ttt Phe	ggg Gly	acc Thr	tcc Ser	ggt Gly	cag Gln	aaa Lys	acc Thr	aaa Lys	att Ile	ata Ile	agc Ser	aac Asn	aga Arg	ggg Gly	gaa Glu	1488
				485					490					495		
aac Asn	agc Ser	tgc Cys	aag Lys	gcc Ala	aca Thr	ggc Gly	cag Gln	gtc Val	tgc Cys	cat His	gcc Ala	ttg Leu	tgc Cys	tcc Ser	ccc Pro	1536
			500					505					510			
gag Glu	ggc Gly	tgc Cys	tgg Trp	ggc Gly	ccg Pro	gag Glu	ccc Pro	agg Arg	gac Asp	tgc Cys	gtc Val	tct Ser	tgc Cys	cgg Arg	aat Asn	1584
		515					520					525				
gtc Val	agc Ser	cga Arg	ggc Gly	agg Arg	gaa Glu	tgc Cys	gtg Val	gac Asp	aag Lys	tgc Cys	aac Asn	ctt Leu	ctg Leu	gag Glu	ggg Gly	1632

530	535	540	
gag cca agg gag ttt gtg gag aac tct gag tgc ata cag tgc cac cca			1680
Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro			
545	550	555	560
gag tgc ctg cct cag gcc atg aac atc acc tgc aca gga cgg gga cca			1728
Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro			
	565	570	575
gac aac tgt atc cag tgt gcc cac tac att gac ggc ccc cac tgc gtc			1776
Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val			
	580	585	590
aag acc tgc ccg gca gga gtc atg gga gaa aac aac acc ctg gtc tgg			1824
Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn Thr Leu Val Trp			
	595	600	605
aag tac gca gac gcc ggc cat gtg tgc cac ctg tgc cat cca aac tgc			1872
Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys			
	610	615	620
acc tac ggg tcc taa			1887
Thr Tyr Gly Ser			
625			

<210> 8

<211> 628

<212> PRT

<213> Human(homo sapiens)

<400> 8

Met Arg Pro Ser Gly Thr Ala Gly Ala Ala Leu Leu Ala Leu Leu Ala			
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Ala Leu Cys Pro Ala Ser Arg Ala Leu Glu Glu Lys Lys Val Cys Gln			
	20	25	30
Gly Thr Ser Asn Lys Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe			
	35	40	45
Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn			
	50	55	60
Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys			
65	70	75	80

Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val  
85 90 95

Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr  
100 105 110

Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn  
115 120 125

Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu  
130 135 140

His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu  
145 150 155 160

Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met  
165 170 175

Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro  
180 185 190

Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln  
195 200 205

Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg  
210 215 220

Gly Lys Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys  
225 230 235 240

Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp  
245 250 255

Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro  
260 265 270

Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly  
275 280 285

Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His  
290 295 300

Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr Glu Met Glu Glu  
305 310 315 320

Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro Cys Arg Lys Val  
325 330 335

Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn  
340 345 350

Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp  
355 360 365

Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr  
370 375 380

Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu  
385 390 395 400

Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Glu Asn Arg Thr Asp  
405 410 415

Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln  
420 425 430

His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn Ile Thr Ser Leu  
435 440 445

Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser  
450 455 460

Gly Asn Lys Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu  
465 470 475 480

Phe Gly Thr Ser Gly Gln Lys Thr Lys Ile Ile Ser Asn Arg Gly Glu  
485 490 495

Asn Ser Cys Lys Ala Thr Gly Gln Val Cys His Ala Leu Cys Ser Pro  
500 505 510

Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Arg Asn  
515 520 525

Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn Leu Leu Glu Gly  
530 535 540

Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro  
545 550 555 560

Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro  
565 570 575

Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val  
580 585 590

Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn Thr Leu Val Trp  
595 600 605

Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys  
610 615 620

Thr Tyr Gly Ser  
625

<210> 9

<211> 1218

<212> DNA

<213> Human homo sapiens)

<220>

<221> CDS

<222> (1)..(1215)

<223>

<400> 9

atg cga ccc tcc ggg acg gcc ggg gca gcg ctc ctg gcg ctg ctg gct	48
Met Arg Pro Ser Gly Thr Ala Gly Ala Ala Leu Leu Ala Leu Leu Ala	
1 5 10 15	

gcg ctc tgc ccg gcg agt cgg gct ctg gag gaa aag aaa gtt tgc caa	96
Ala Leu Cys Pro Ala Ser Arg Ala Leu Glu Glu Lys Lys Val Cys Gln	
20 25 30	



ggc acg agt aac aag ctc acg cag ttg ggc act ttt gaa gat cat ttt Gly Thr Ser Asn Lys Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe 35 40 45	144
ctc agc ctc cag agg atg ttc aat aac tgt gag gtg gtc ctt ggg aat Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn 50 55 60	192
ttg gaa att acc tat gtg cag agg aat tat gat ctt tcc ttc tta aag Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys 65 70 75 80	240
acc atc cag gag gtg gct ggt tat gtc ctc att gcc ctc aac aca gtg Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val 85 90 95	288
gag cga att cct ttg gaa aac ctg cag atc atc aga gga aat atg tac Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr 100 105 110	336
tac gaa aat tcc tat gcc tta gca gtc tta tct aac tat gat gca aat Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn 115 120 125	384
aaa acc gga ctg aag gag ctg ccc atg aga aat tta cag gaa atc ctg Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu 130 135 140	432
cat ggc gcc gtg cgg ttc agc aac aac cct gcc ctg tgc aac gtg gag His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu 145 150 155 160	480
agc atc cag tgg cgg gac ata gtc agc agt gac ttt ctc agc aac atg Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met 165 170 175	528
tcg atg gac ttc cag aac cac ctg ggc agc tgc caa aag tgt gat cca Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro 180 185 190	576
agc tgt ccc aat ggg agc tgc tgg ggt gca gga gag gag aac tgc cag Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln 195 200 205	624
aaa ctg acc aaa atc atc tgt gcc cag cag tgc tcc ggg cgc tgc cgt Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg 210 215 220	672
ggc aag tcc ccc agt gac tgc tgc cac aac cag tgt gct gca ggc tgc Gly Lys Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys 225 230 235 240	720
aca ggc ccc cgg gag agc gac tgc ctg gtc tgc cgc aaa ttc cga gac Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp 245 250 255	768
gaa gcc acg tgc aag gac acc tgc ccc cca ctc atg ctc tac aac ccc	816

Glu	Ala	Thr	Cys	Lys	Asp	Thr	Cys	Pro	Pro	Leu	Met	Leu	Tyr	Asn	Pro		
			260					265					270				
acc	acg	tac	cag	atg	gat	gtg	aac	ccc	gag	ggc	aaa	tac	agc	ttt	ggg		864
Thr	Thr	Tyr	Gln	Met	Asp	Val	Asn	Pro	Glu	Gly	Lys	Tyr	Ser	Phe	Gly		
		275					280					285					
gcc	acc	tgc	gtg	aag	aag	tgt	ccc	cgt	aat	tat	gtg	gtg	aca	gat	cac		912
Ala	Thr	Cys	Val	Lys	Lys	Cys	Pro	Arg	Asn	Tyr	Val	Val	Thr	Asp	His		
		290				295					300						
ggc	tcg	tgc	gtc	cga	gcc	tgt	ggg	gcc	gac	agc	tat	gag	atg	gag	gaa		960
Gly	Ser	Cys	Val	Arg	Ala	Cys	Gly	Ala	Asp	Ser	Tyr	Glu	Met	Glu	Glu		
305					310				315						320		
gac	ggc	gtc	cgc	aag	tgt	aag	aag	tgc	gaa	ggg	cct	tgc	cgc	aaa	gtg		1008
Asp	Gly	Val	Arg	Lys	Cys	Lys	Lys	Cys	Glu	Gly	Pro	Cys	Arg	Lys	Val		
			325					330						335			
tgt	aac	gga	ata	ggg	att	ggg	gaa	ttt	aaa	gac	tca	ctc	tcc	ata	aat		1056
Cys	Asn	Gly	Ile	Gly	Ile	Gly	Glu	Phe	Lys	Asp	Ser	Leu	Ser	Ile	Asn		
			340				345						350				
gct	acg	aat	att	aaa	cac	ttc	aaa	aac	tgc	acc	tcc	atc	agt	ggc	gat		1104
Ala	Thr	Asn	Ile	Lys	His	Phe	Lys	Asn	Cys	Thr	Ser	Ile	Ser	Gly	Asp		
		355				360					365						
ctc	cac	atc	ctg	ccg	gtg	gca	ttt	agg	ggg	gac	tcc	ttc	aca	cat	act		1152
Leu	His	Ile	Leu	Pro	Val	Ala	Phe	Arg	Gly	Asp	Ser	Phe	Thr	His	Thr		
		370				375					380						
cct	cct	ctg	gat	cca	cag	gaa	ctg	gat	att	ctg	aaa	acc	gta	aag	gaa		1200
Pro	Pro	Leu	Asp	Pro	Gln	Glu	Leu	Asp	Ile	Leu	Lys	Thr	Val	Lys	Glu		
385					390				395						400		
atc	aca	ggg	ttg	agc	tga												1218
Ile	Thr	Gly	Leu	Ser													
				405													

<210> 10

<211> 405

<212> PRT

<213> Human (homo sapiens)

<400> 10

Met	Arg	Pro	Ser	Gly	Thr	Ala	Gly	Ala	Ala	Leu	Leu	Ala	Leu	Leu	Ala	
1				5				10							15	

Ala Leu Cys Pro Ala Ser Arg Ala Leu Glu Glu Lys Lys Val Cys Gln

20

25

30

Gly Thr Ser Asn Lys Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe  
35 40 45

Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn  
50 55 60

Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys  
65 70 75 80

Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val  
85 90 95

Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr  
100 105 110

Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn  
115 120 125

Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu  
130 135 140

His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu  
145 150 155 160

Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met  
165 170 175

Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro  
180 185 190

Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln  
195 200 205

Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg  
210 215 220

Gly Lys Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys  
225 230 235 240

Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp  
245 250 255

Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro  
 260 265 270

Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly  
 275 280 285

Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His  
 290 295 300

Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr Glu Met Glu Glu  
 305 310 315 320

Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro Cys Arg Lys Val  
 325 330 335

Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn  
 340 345 350

Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp  
 355 360 365

Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr  
 370 375 380

Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu  
 385 390 395 400

Ile Thr Gly Leu Ser  
 405

<210> 11

<211> 2829

<212> DNA

<213> EE(homo sapiens)

<220>

<221> CDS

<222> (1)..(2826)

<223>

<400> 11

atg cga ccc tcc ggg acg gcc ggg gca gcg ctc ctg gcg ctg ctg gct	48
Met Arg Pro Ser Gly Thr Ala Gly Ala Ala Leu Leu Ala Leu Leu Ala	
1 5 10 15	
gcg ctc tgc ccg gcg agt cgg gct ctg gag gaa aag cgt aat tat gtg	96
Ala Leu Cys Pro Ala Ser Arg Ala Leu Glu Glu Lys Arg Asn Tyr Val	
20 25 30	
gtg aca gat cac ggc tcg tgc gtc cga gcc tgt ggg gcc gac agc tat	144
Val Thr Asp His Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr	
35 40 45	
gag atg gag gaa gac ggc gtc cgc aag tgt aag aag tgc gaa ggg cct	192
Glu Met Glu Glu Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro	
50 55 60	
tgc cgc aaa gtg tgt aac gga ata ggt att ggt gaa ttt aaa gac tca	240
Cys Arg Lys Val Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser	
65 70 75 80	
ctc tcc ata aat gct acg aat att aaa cac ttc aaa aac tgc acc tcc	288
Leu Ser Ile Asn Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser	
85 90 95	
atc agt ggc gat ctc cac atc ctg ccg gtg gca ttt agg ggt gac tcc	336
Ile Ser Gly Asp Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser	
100 105 110	
ttc aca cat act cct cct ctg gat cca cag gaa ctg gat att ctg aaa	384
Phe Thr His Thr Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys	
115 120 125	
acc gta aag gaa atc aca ggg ttt ttg ctg att cag gct tgg cct gaa	432
Thr Val Lys Glu Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Glu	
130 135 140	
aac agg acg gac ctc cat gcc ttt gag aac cta gaa atc ata cgc ggc	480
Asn Arg Thr Asp Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly	
145 150 155 160	
agg acc aag caa cat ggt cag ttt tct ctt gca gtc gtc agc ctg aac	528
Arg Thr Lys Gln His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn	
165 170 175	
ata aca tcc ttg gga tta cgc tcc ctc aag gag ata agt gat gga gat	576
Ile Thr Ser Leu Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp	
180 185 190	
gtg ata att tca gga aac aaa aat ttg tgc tat gca aat aca ata aac	624
Val Ile Ile Ser Gly Asn Lys Asn Leu Cys Tyr Ala Asn Thr Ile Asn	
195 200 205	

tgg aaa aaa ctg ttt ggg acc tcc ggt cag aaa acc aaa att ata agc Trp Lys Lys Leu Phe Gly Thr Ser Gly Gln Lys Thr Lys Ile Ile Ser 210 215 220	672
aac aga ggt gaa aac agc tgc aag gcc aca ggc cag gtc tgc cat gcc Asn Arg Gly Glu Asn Ser Cys Lys Ala Thr Gly Gln Val Cys His Ala 225 230 235 240	720
ttg tgc tcc ccc gag ggc tgc tgg ggc ccg gag ccc agg gac tgc gtc Leu Cys Ser Pro Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val 245 250 255	768
tct tgc cgg aat gtc agc cga ggc agg gaa tgc gtg gac aag tgc aac Ser Cys Arg Asn Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn 260 265 270	816
ctt ctg gag ggt gag cca agg gag ttt gtg gag aac tct gag tgc ata Leu Leu Glu Gly Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile 275 280 285	864
cag tgc cac cca gag tgc ctg cct cag gcc atg aac atc acc tgc aca Gln Cys His Pro Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr 290 295 300	912
gga cgg gga cca gac aac tgt atc cag tgt gcc cac tac att gac ggc Gly Arg Gly Pro Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly 305 310 315 320	960
ccc cac tgc gtc aag acc tgc ccg gca gga gtc atg gga gaa aac aac Pro His Cys Val Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn 325 330 335	1008
acc ctg gtc tgg aag tac gca gac gcc ggc cat gtg tgc cac ctg tgc Thr Leu Val Trp Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys 340 345 350	1056
cat cca aac tgc acc tac gga tgc act ggg cca ggt ctt gaa ggc tgt His Pro Asn Cys Thr Tyr Gly Cys Thr Gly Pro Gly Leu Glu Gly Cys 355 360 365	1104
cca acg aat ggg cct aag atc ccg tcc atc gcc act ggg atg gtg ggg Pro Thr Asn Gly Pro Lys Ile Pro Ser Ile Ala Thr Gly Met Val Gly 370 375 380	1152
gcc ctc ctc ttg ctg ctg gtg gtg gcc ctg ggg atc ggc ctc ttc atg Ala Leu Leu Leu Leu Leu Val Val Ala Leu Gly Ile Gly Leu Phe Met 385 390 395 400	1200
cga agg cgc cac atc gtt cgg aag cgc acg ctg cgg agg ctg ctg cag Arg Arg Arg His Ile Val Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln 405 410 415	1248
gag agg gag ctt gtg gag cct ctt aca ccc agt gga gaa gct ccc aac Glu Arg Glu Leu Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn 420 425 430	1296

caa gct ctc ttg agg atc ttg aag gaa act gaa ttc aaa aag atc aaa Gln Ala Leu Leu Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys 435 440 445	1344
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tac ctg ctc aac tgg tgt gtg cag atc gca aag ggc atg aac tac ttg Tyr Leu Leu Asn Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu 545 550 555 560	1680
gag gac cgt cgc ttg gtg cac cgc gac ctg gca gcc agg aac gta ctg Glu Asp Arg Arg Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu 565 570 575	1728
gtg aaa aca ccg cag cat gtc aag atc aca gat ttt ggg ctg gcc aaa Val Lys Thr Pro Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys 580 585 590	1776
ctg ctg ggt gcg gaa gag aaa gaa tac cat gca gaa gga ggc aaa gtg Leu Leu Gly Ala Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val 595 600 605	1824
cct atc aag tgg atg gca ttg gaa tca att tta cac aga atc tat acc Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr 610 615 620	1872
cac cag agt gat gtc tgg agc tac ggg gtg acc gtt tgg gag ttg atg His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met 625 630 635 640	1920
acc ttt gga tcc aag cca tat gac gga atc cct gcc agc gag atc tcc Thr Phe Gly Ser Lys Pro Tyr Asp Gly Ile Pro Ala Ser Glu Ile Ser 645 650 655	1968
tcc atc ctg gag aaa gga gaa cgc ctc cct cag cca ccc ata tgt acc	2016

Ser	Ile	Leu	Glu	Lys	Gly	Glu	Arg	Leu	Pro	Gln	Pro	Pro	Ile	Cys	Thr		
			660					665					670				
atc	gat	gtc	tac	atg	atc	atg	gtc	aag	tgc	tgg	atg	ata	gac	gca	gat	2064	
Ile	Asp	Val	Tyr	Met	Ile	Met	Val	Lys	Cys	Trp	Met	Ile	Asp	Ala	Asp		
		675					680					685					
agt	cgc	cca	aag	ttc	cgt	gag	ttg	atc	atc	gaa	ttc	tcc	aaa	atg	gcc	2112	
Ser	Arg	Pro	Lys	Phe	Arg	Glu	Leu	Ile	Ile	Glu	Phe	Ser	Lys	Met	Ala		
	690					695				700							
cga	gac	ccc	cag	cgc	tac	ctt	gtc	att	cag	ggg	gat	gaa	aga	atg	cat	2160	
Arg	Asp	Pro	Gln	Arg	Tyr	Leu	Val	Ile	Gln	Gly	Asp	Glu	Arg	Met	His		
705					710					715					720		
ttg	cca	agt	cct	aca	gac	tcc	aac	ttc	tac	cgt	gcc	ctg	atg	gat	gaa	2208	
Leu	Pro	Ser	Pro	Thr	Asp	Ser	Asn	Phe	Tyr	Arg	Ala	Leu	Met	Asp	Glu		
				725					730					735			
gaa	gac	atg	gac	gac	gtg	gtg	gat	gcc	gac	gag	tac	ctc	atc	cca	cag	2256	
Glu	Asp	Met	Asp	Asp	Val	Val	Asp	Ala	Asp	Glu	Tyr	Leu	Ile	Pro	Gln		
			740					745					750				
cag	ggc	ttc	ttc	agc	agc	ccc	tcc	acg	tca	cgg	act	ccc	ctc	ctg	agc	2304	
Gln	Gly	Phe	Phe	Ser	Ser	Pro	Ser	Thr	Ser	Arg	Thr	Pro	Leu	Leu	Ser		
		755				760						765					
tct	ctg	agt	gca	acc	agc	aac	aat	tcc	acc	gtg	gct	tgc	att	gat	aga	2352	
Ser	Leu	Ser	Ala	Thr	Ser	Asn	Asn	Ser	Thr	Val	Ala	Cys	Ile	Asp	Arg		
	770					775				780							
aat	ggg	ctg	caa	agc	tgt	ccc	atc	aag	gaa	gac	agc	ttc	ttg	cag	cga	2400	
Asn	Gly	Leu	Gln	Ser	Cys	Pro	Ile	Lys	Glu	Asp	Ser	Phe	Leu	Gln	Arg		
785					790				795					800			
tac	agc	tca	gac	ccc	aca	ggc	gcc	ttg	act	gag	gac	agc	ata	gac	gac	2448	
Tyr	Ser	Ser	Asp	Pro	Thr	Gly	Ala	Leu	Thr	Glu	Asp	Ser	Ile	Asp	Asp		
				805				810						815			
acc	ttc	ctc	cca	gtg	cct	gaa	tac	ata	aac	cag	tcc	gtt	ccc	aaa	agg	2496	
Thr	Phe	Leu	Pro	Val	Pro	Glu	Tyr	Ile	Asn	Gln	Ser	Val	Pro	Lys	Arg		
			820					825					830				
ccc	gct	ggc	tct	gtg	cag	aat	cct	gtc	tat	cac	aat	cag	cct	ctg	aac	2544	
Pro	Ala	Gly	Ser	Val	Gln	Asn	Pro	Val	Tyr	His	Asn	Gln	Pro	Leu	Asn		
		835				840						845					
ccc	gcg	ccc	agc	aga	gac	cca	cac	tac	cag	gac	ccc	cac	agc	act	gca	2592	
Pro	Ala	Pro	Ser	Arg	Asp	Pro	His	Tyr	Gln	Asp	Pro	His	Ser	Thr	Ala		
		850				855					860						
gtg	ggc	aac	ccc	gag	tat	ctc	aac	act	gtc	cag	ccc	acc	tgt	gtc	aac	2640	
Val	Gly	Asn	Pro	Glu	Tyr	Leu	Asn	Thr	Val	Gln	Pro	Thr	Cys	Val	Asn		
865					870				875					880			
agc	aca	ttc	gac	agc	cct	gcc	cac	tgg	gcc	cag	aaa	ggc	agc	cac	caa	2688	
Ser	Thr	Phe	Asp	Ser	Pro	Ala	His	Trp	Ala	Gln	Lys	Gly	Ser	His	Gln		



	885	890	895	
att agc ctg gac aac cct gac tac cag cag gac ttc ttt ccc aag gaa				2736
Ile Ser Leu Asp Asn Pro Asp Tyr Gln Gln Asp Phe Phe Pro Lys Glu				
	900	905	910	
gcc aag cca aat ggc atc ttt aag ggc tcc aca gct gaa aat gca gaa				2784
Ala Lys Pro Asn Gly Ile Phe Lys Gly Ser Thr Ala Glu Asn Ala Glu				
	915	920	925	
tac cta agg gtc gcg cca caa agc agt gaa ttt att gga gca tga				2829
Tyr Leu Arg Val Ala Pro Gln Ser Ser Glu Phe Ile Gly Ala				
	930	935	940	

<210> 12

<211> 942

<212> PRT

<213> Human(homo sapiens)

<400> 12

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Ala Leu Cys Pro Ala Ser Arg Ala Leu Glu Glu Lys Arg Asn Tyr Val				
	20	25	30	
Val Thr Asp His Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr				
	35	40	45	
Glu Met Glu Glu Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro				
	50	55	60	
Cys Arg Lys Val Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser				
	65	70	75	80
Leu Ser Ile Asn Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser				
	85	90	95	
Ile Ser Gly Asp Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser				
	100	105	110	
Phe Thr His Thr Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys				
	115	120	125	

Thr Val Lys Glu Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Glu  
130 135 140

Asn Arg Thr Asp Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly  
145 150 155 160

Arg Thr Lys Gln His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn  
165 170 175

Ile Thr Ser Leu Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp  
180 185 190

Val Ile Ile Ser Gly Asn Lys Asn Leu Cys Tyr Ala Asn Thr Ile Asn  
195 200 205

Trp Lys Lys Leu Phe Gly Thr Ser Gly Gln Lys Thr Lys Ile Ile Ser  
210 215 220

Asn Arg Gly Glu Asn Ser Cys Lys Ala Thr Gly Gln Val Cys His Ala  
225 230 235 240

Leu Cys Ser Pro Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val  
245 250 255

Ser Cys Arg Asn Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn  
260 265 270

Leu Leu Glu Gly Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile  
275 280 285

Gln Cys His Pro Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr  
290 295 300

Gly Arg Gly Pro Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly  
305 310 315 320

Pro His Cys Val Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn  
325 330 335

Thr Leu Val Trp Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys  
340 345 350

His Pro Asn Cys Thr Tyr Gly Cys Thr Gly Pro Gly Leu Glu Gly Cys  
355 360 365

Pro Thr Asn Gly Pro Lys Ile Pro Ser Ile Ala Thr Gly Met Val Gly  
370 375 380

Ala Leu Leu Leu Leu Leu Val Val Ala Leu Gly Ile Gly Leu Phe Met  
385 390 395 400

Arg Arg Arg His Ile Val Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln  
405 410 415

Glu Arg Glu Leu Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn  
420 425 430

Gln Ala Leu Leu Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys  
435 440 445

Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile  
450 455 460

Pro Glu Gly Glu Lys Val Lys Ile Pro Val Ala Ile Lys Glu Leu Arg  
465 470 475 480

Glu Ala Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr  
485 490 495

Val Met Ala Ser Val Asp Asn Pro His Val Cys Arg Leu Leu Gly Ile  
500 505 510

Cys Leu Thr Ser Thr Val Gln Leu Ile Thr Gln Leu Met Pro Phe Gly  
515 520 525

Cys Leu Leu Asp Tyr Val Arg Glu His Lys Asp Asn Ile Gly Ser Gln  
530 535 540

Tyr Leu Leu Asn Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu  
545 550 555 560

Glu Asp Arg Arg Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu  
565 570 575

Val Lys Thr Pro Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys  
580 585 590

Leu Leu Gly Ala Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val  
595 600 605

Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr  
610 615 620

His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met  
625 630 635 640

Thr Phe Gly Ser Lys Pro Tyr Asp Gly Ile Pro Ala Ser Glu Ile Ser  
645 650 655

Ser Ile Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr  
660 665 670

Ile Asp Val Tyr Met Ile Met Val Lys Cys Trp Met Ile Asp Ala Asp  
675 680 685

Ser Arg Pro Lys Phe Arg Glu Leu Ile Ile Glu Phe Ser Lys Met Ala  
690 695 700

Arg Asp Pro Gln Arg Tyr Leu Val Ile Gln Gly Asp Glu Arg Met His  
705 710 715 720

Leu Pro Ser Pro Thr Asp Ser Asn Phe Tyr Arg Ala Leu Met Asp Glu  
725 730 735

Glu Asp Met Asp Asp Val Val Asp Ala Asp Glu Tyr Leu Ile Pro Gln  
740 745 750

Gln Gly Phe Phe Ser Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser  
755 760 765

Ser Leu Ser Ala Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asp Arg  
770 775 780

Asn Gly Leu Gln Ser Cys Pro Ile Lys Glu Asp Ser Phe Leu Gln Arg  
785 790 795 800

Tyr Ser Ser Asp Pro Thr Gly Ala Leu Thr Glu Asp Ser Ile Asp Asp

805

810

815

Thr Phe Leu Pro Val Pro Glu Tyr Ile Asn Gln Ser Val Pro Lys Arg  
 820 825 830

Pro Ala Gly Ser Val Gln Asn Pro Val Tyr His Asn Gln Pro Leu Asn  
 835 840 845

Pro Ala Pro Ser Arg Asp Pro His Tyr Gln Asp Pro His Ser Thr Ala  
 850 855 860

Val Gly Asn Pro Glu Tyr Leu Asn Thr Val Gln Pro Thr Cys Val Asn  
 865 870 875 880

Ser Thr Phe Asp Ser Pro Ala His Trp Ala Gln Lys Gly Ser His Gln  
 885 890 895

Ile Ser Leu Asp Asn Pro Asp Tyr Gln Gln Asp Phe Phe Pro Lys Glu  
 900 905 910

Ala Lys Pro Asn Gly Ile Phe Lys Gly Ser Thr Ala Glu Asn Ala Glu  
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Tyr Leu Arg Val Ala Pro Gln Ser Ser Glu Phe Ile Gly Ala  
 930 935 940

&lt;210&gt; 13

&lt;211&gt; 3633

&lt;212&gt; DNA

&lt;213&gt; Ð;Êó(Mus musculus)

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(3630)

&lt;223&gt;

&lt;400&gt; 13

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Ala	Leu	Cys	Ala	Ala	Gly	Gly	Ala	Leu	Glu	Glu	Lys	Lys	Val	Cys	Gln		
			20					25					30				
ggc	aca	agt	aac	agg	ctc	acc	caa	ctg	ggc	act	ttt	gaa	gac	cac	ttt		144
Gly	Thr	Ser	Asn	Arg	Leu	Thr	Gln	Leu	Gly	Thr	Phe	Glu	Asp	His	Phe		
		35					40					45					
ctg	agc	ctg	cag	agg	atg	tac	aac	aac	tgt	gaa	gtg	gtc	ctt	ggg	aac		192
Leu	Ser	Leu	Gln	Arg	Met	Tyr	Asn	Asn	Cys	Glu	Val	Val	Leu	Gly	Asn		
	50					55				60							
ttg	gaa	att	acc	tat	gtg	caa	agg	aat	tac	gac	ctt	tcc	ttc	tta	aag		240
Leu	Glu	Ile	Thr	Tyr	Val	Gln	Arg	Asn	Tyr	Asp	Leu	Ser	Phe	Leu	Lys		
65					70				75						80		
acc	atc	cag	gag	gtg	gcc	ggc	tat	gtc	ctc	att	gcc	ctc	aac	acc	gtg		288
Thr	Ile	Gln	Glu	Val	Ala	Gly	Tyr	Val	Leu	Ile	Ala	Leu	Asn	Thr	Val		
				85				90						95			
gag	aga	atc	cct	ttg	gag	aac	ctg	cag	atc	atc	agg	gga	aat	gct	ctt		336
Glu	Arg	Ile	Pro	Leu	Glu	Asn	Leu	Gln	Ile	Ile	Arg	Gly	Asn	Ala	Leu		
			100					105					110				
tat	gaa	aac	acc	tat	gcc	tta	gcc	atc	ctg	tcc	aac	tat	ggg	aca	aac		384
Tyr	Glu	Asn	Thr	Tyr	Ala	Leu	Ala	Ile	Leu	Ser	Asn	Tyr	Gly	Thr	Asn		
		115					120					125					
aga	act	ggg	ctt	agg	gaa	ctg	ccc	atg	cgg	aac	tta	cag	gaa	atc	ctg		432
Arg	Thr	Gly	Leu	Arg	Glu	Leu	Pro	Met	Arg	Asn	Leu	Gln	Glu	Ile	Leu		
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att	ggc	gct	gtg	cga	ttc	agc	aac	aac	ccc	atc	ctc	tgc	aat	atg	gat		480
Ile	Gly	Ala	Val	Arg	Phe	Ser	Asn	Asn	Pro	Ile	Leu	Cys	Asn	Met	Asp		
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act	atc	cag	tgg	agg	gac	atc	gtc	caa	aac	gtc	ttt	atg	agc	aac	atg		528
Thr	Ile	Gln	Trp	Arg	Asp	Ile	Val	Gln	Asn	Val	Phe	Met	Ser	Asn	Met		
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Ser	Met	Asp	Leu	Gln	Ser	His	Pro	Ser	Ser	Cys	Pro	Lys	Cys	Asp	Pro		
			180					185					190				
agc	tgt	ccc	aat	gga	agc	tgc	tgg	gga	gga	gga	gag	gag	aac	tgc	cag		624
Ser	Cys	Pro	Asn	Gly	Ser	Cys	Trp	Gly	Gly	Gly	Glu	Glu	Asn	Cys	Gln		
		195					200					205					
aaa	ttg	acc	aaa	atc	atc	tgt	gcc	cag	caa	tgt	tcc	cat	cgc	tgt	cgt		672
Lys	Leu	Thr	Lys	Ile	Ile	Cys	Ala	Gln	Gln	Cys	Ser	His	Arg	Cys	Arg		
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Gly	Arg	Ser	Pro	Ser	Asp	Cys	Cys	His	Asn	Gln	Cys	Ala	Ala	Gly	Cys		

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Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp	245	250	255	
gag gcc aca tgc aaa gac acc tgc cca cca ctc atg ctg tac aac ccc				816
Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro	260	265	270	
acc acc tat cag atg gat gtc aac cct gaa ggg aag tac agc ttt ggt				864
Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly	275	280	285	
gcc acc tgt gtg aag aag tgc ccc cga aac tac gtg gtg aca gat cat				912
Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His	290	295	300	
ggc tca tgt gtc cga gcc tgt ggg cct gac tac tac gaa gtg gaa gaa				960
Gly Ser Cys Val Arg Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu	305	310	315	320
gat ggc atc cgc aag tgt aaa aaa tgt gat ggg ccc tgt cgc aaa gtt				1008
Asp Gly Ile Arg Lys Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val	325	330	335	
tgt aat ggc ata ggc att ggt gaa ttt aaa gac aca ctc tcc ata aat				1056
Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn	340	345	350	
gct aca aac atc aaa cac ttc aaa tac tgc act gcc atc agc ggg gac				1104
Ala Thr Asn Ile Lys His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp	355	360	365	
ctt cac atc ctg cca gtg gcc ttt aag ggg gat tct ttc acg cgc act				1152
Leu His Ile Leu Pro Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr	370	375	380	
cct cct cta gac cca cga gaa cta gaa att cta aaa acc gta aag gaa				1200
Pro Pro Leu Asp Pro Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu	385	390	395	400
ata aca ggc ttt ttg ctg att cag gct tgg cct gat aac tgg act gac				1248
Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp	405	410	415	
ctc cat gct ttc gag aac cta gaa ata ata cgt ggc aga aca aag caa				1296
Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln	420	425	430	
cat ggt cag ttt tct ttg gcg gtc gtt ggc ctg aac atc aca tca ctg				1344
His Gly Gln Phe Ser Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu	435	440	445	
ggg ctg cgt tcc ctc aag gag atc agt gat ggg gat gtg atc att tct				1392
Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser	450	455	460	

gga aac cga aat ttg tgc tac gca aac aca ata aac tgg aaa aaa ctc	1440
Gly Asn Arg Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu	
465 470 475 480	
ttc ggg aca ccc aat cag aaa acc aaa atc atg aac aac aga gct gag	1488
Phe Gly Thr Pro Asn Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu	
485 490 495	
aaa gac tgc aag gcc gtg aac cac gtc tgc aat cct tta tgc tcc tcg	1536
Lys Asp Cys Lys Ala Val Asn His Val Cys Asn Pro Leu Cys Ser Ser	
500 505 510	
gaa ggc tgc tgg ggc cct gag ccc agg gac tgt gtc tcc tgc cag aat	1584
Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Gln Asn	
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gtg agc aga ggc agg gag tgc gtg gag aaa tgc aac atc ctg gag ggg	1632
Val Ser Arg Gly Arg Glu Cys Val Glu Lys Cys Asn Ile Leu Glu Gly	
530 535 540	
gaa cca agg gag ttt gtg gaa aat tct gaa tgc atc cag tgc cat cca	1680
Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro	
545 550 555 560	
gaa tgt ctg ccc cag gcc atg aac atc acc tgt aca ggc agg ggg cca	1728
Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro	
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Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val	
580 585 590	
aag acc tgc cca gct ggc atc atg gga gag aac aac act ctg gtc tgg	1824
Lys Thr Cys Pro Ala Gly Ile Met Gly Glu Asn Asn Thr Leu Val Trp	
595 600 605	
aag tat gca gat gcc aat aat gtc tgc cac cta tgc cac gcc aac tgt	1872
Lys Tyr Ala Asp Ala Asn Asn Val Cys His Leu Cys His Ala Asn Cys	
610 615 620	
acc tat gga tgt gct ggg cca ggt ctt caa gga tgt gaa gtg tgg cca	1920
Thr Tyr Gly Cys Ala Gly Pro Gly Leu Gln Gly Cys Glu Val Trp Pro	
625 630 635 640	
tct ggg cca aag ata cca tct att gcc act ggg att gtg ggt ggc ctc	1968
Ser Gly Pro Lys Ile Pro Ser Ile Ala Thr Gly Ile Val Gly Gly Leu	
645 650 655	
ctc ttc ata gtg gtg gtg gcc ctt ggg att ggc cta ttc atg cga aga	2016
Leu Phe Ile Val Val Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg	
660 665 670	
cgt cac att gtt cga aag cgt aca cta cgc cgc ctg ctt caa gag aga	2064
Arg His Ile Val Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg	
675 680 685	



gag ctc gtg gaa cct ctc aca ccc agc gga gaa gct cca aac caa gcc Glu Leu Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala 690 695 700	2112
cac ttg agg ata tta aag gaa aca gaa ttc aaa aag atc aaa gtt ctg His Leu Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu 705 710 715 720	2160
ggt tcg gga gca ttt ggc aca gtg tat aag ggt ctc tgg atc cca gaa Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu 725 730 735	2208
ggt gag aaa gta aaa atc ccg gtg gcc atc aag gag tta aga gaa gcc Gly Glu Lys Val Lys Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala 740 745 750	2256
aca tct cca aaa gcc aac aaa gaa atc ctt gac gaa gcc tat gtg atg Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met 755 760 765	2304
gct agt gtg gac aac cct cat gta tgc cgc ctc ctg ggc atc tgt ctg Ala Ser Val Asp Asn Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu 770 775 780	2352
acc tcc act gtc cag ctc att aca cag ctc atg ccc tac ggt tgc ctc Thr Ser Thr Val Gln Leu Ile Thr Gln Leu Met Pro Tyr Gly Cys Leu 785 790 795 800	2400
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ctc aac tgg tgt gtg cag att gca aag ggc atg aac tac ctg gaa gat Leu Asn Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp 820 825 830	2496
cgg cgt ttg gtg cac cgt gac ttg gca gcc agg aat gta ctg gtg aag Arg Arg Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys 835 840 845	2544
aca cca cag cat gtc aag atc aca gat ttt ggg ctg gcc aaa ctg ctt Thr Pro Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu 850 855 860	2592
ggt gct gaa gag aaa gaa tat cat gcc gag ggg ggc aaa gtg cct atc Gly Ala Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile 865 870 875 880	2640
aag tgg atg gct ttg gaa tca att tta cac cga att tat aca cac caa Lys Trp Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln 885 890 895	2688
agt gat gtc tgg agc tat ggt gtc act gtg tgg gaa ctg atg acc ttt Ser Asp Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe 900 905 910	2736
ggg tcc aag cct tat gat gga atc cca gca agt gac atc tca tcc atc	2784

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cta	gag	aaa	gga	gaa	cgc	ctt	cca	cag	cca	cct	atc	tgc	acc	atc	gat		2832
Leu	Glu	Lys	Gly	Glu	Arg	Leu	Pro	Gln	Pro	Pro	Ile	Cys	Thr	Ile	Asp		
		930					935				940						
gtc	tac	atg	atc	atg	gtc	aag	tgc	tgg	atg	ata	gat	gct	gat	agc	cgc		2880
Val	Tyr	Met	Ile	Met	Val	Lys	Cys	Trp	Met	Ile	Asp	Ala	Asp	Ser	Arg		
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Pro	Lys	Phe	Arg	Glu	Leu	Ile	Leu	Glu	Phe	Ser	Lys	Met	Ala	Arg	Asp		
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Pro	Gln	Arg	Tyr	Leu	Val	Ile	Gln	Gly	Asp	Glu	Arg	Met	His	Leu	Pro		
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Ser	Pro	Thr	Asp	Ser	Asn	Phe	Tyr	Arg	Ala	Leu	Met	Asp	Glu	Glu	Asp		
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atg	gag	gat	gta	gtt	gat	gct	gat	gag	tat	ctt	acc	cca	cag	caa			3069
Met	Glu	Asp	Val	Val	Asp	Ala	Asp	Glu	Tyr	Leu	Thr	Pro	Gln	Gln			
		1010				1015					1020						
ggc	ttc	ttc	aac	agc	ccg	tcc	acg	tcg	agg	act	ccc	ctc	ttg	agt			3114
Gly	Phe	Phe	Asn	Ser	Pro	Ser	Thr	Ser	Arg	Thr	Pro	Leu	Leu	Ser			
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tct	ctg	agt	gca	act	agc	aac	aat	tcc	act	gtg	gct	tgc	att	aat			3159
Ser	Leu	Ser	Ala	Thr	Ser	Asn	Asn	Ser	Thr	Val	Ala	Cys	Ile	Asn			
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aga	aat	ggg	agc	tgc	cgt	gtc	aaa	gaa	gac	gcc	ttc	ttg	cag	cgg			3204
Arg	Asn	Gly	Ser	Cys	Arg	Val	Lys	Glu	Asp	Ala	Phe	Leu	Gln	Arg			
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tac	agc	tcc	gac	ccc	aca	ggt	gct	gta	aca	gag	gac	aac	ata	gat			3249
Tyr	Ser	Ser	Asp	Pro	Thr	Gly	Ala	Val	Thr	Glu	Asp	Asn	Ile	Asp			
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Lys	Arg	Pro	Ala	Gly	Ser	Val	Gln	Asn	Pro	Val	Tyr	His	Asn	Gln			
		1100				1105					1110						
ccc	ctg	cat	cca	gct	cct	gga	aga	gac	ctg	cat	tat	caa	aat	ccc			3384
Pro	Leu	His	Pro	Ala	Pro	Gly	Arg	Asp	Leu	His	Tyr	Gln	Asn	Pro			
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cac	agc	aat	gca	gtg	ggc	aac	cct	gag	tat	ctc	aac	act	gcc	cag			3429
His	Ser	Asn	Ala	Val	Gly	Asn	Pro	Glu	Tyr	Leu	Asn	Thr	Ala	Gln			

Gly Ser Lys Pro Tyr Asp Gly Ile Pro Ala Ser Asp Ile Ser Ser Ile	
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Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp	
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gtc tac atg atc atg gtc aag tgc tgg atg ata gat gct gat agc cgc	2880
Val Tyr Met Ile Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg	
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cca aag ttc cga gag ttg att ctt gaa ttc tcc aaa atg gcc cga gac	2928
Pro Lys Phe Arg Glu Leu Ile Leu Glu Phe Ser Lys Met Ala Arg Asp	
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cca cag cgc tac ctt gtt atc cag ggg gat gaa aga atg cat ttg cca	2976
Pro Gln Arg Tyr Leu Val Ile Gln Gly Asp Glu Arg Met His Leu Pro	
980 985 990	
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Ser Pro Thr Asp Ser Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp	
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Ser Leu Ser Ala Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asn	
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Arg Asn Gly Ser Cys Arg Val Lys Glu Asp Ala Phe Leu Gln Arg	
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Tyr Ser Ser Asp Pro Thr Gly Ala Val Thr Glu Asp Asn Ile Asp	
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Asp Ala Phe Leu Pro Val Pro Glu Tyr Val Asn Gln Ser Val Pro	
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Lys Arg Pro Ala Gly Ser Val Gln Asn Pro Val Tyr His Asn Gln	
1100 1105 1110	
ccc ctg cat cca gct cct gga aga gac ctg cat tat caa aat ccc	3384
Pro Leu His Pro Ala Pro Gly Arg Asp Leu His Tyr Gln Asn Pro	
1115 1120 1125	
cac agc aat gca gtg ggc aac cct gag tat ctc aac act gcc cag	3429
His Ser Asn Ala Val Gly Asn Pro Glu Tyr Leu Asn Thr Ala Gln	

1130	1135	1140	
cct acc tgt ctc agt agt ggg	ttt aac agc cct gca	ctc tgg atc	3474
Pro Thr Cys Leu Ser Ser Gly	Phe Asn Ser Pro Ala	Leu Trp Ile	
1145	1150	1155	
cag aaa ggc agt cac caa atg	agc cta gac aac cct	gac tac cag	3519
Gln Lys Gly Ser His Gln Met	Ser Leu Asp Asn Pro	Asp Tyr Gln	
1160	1165	1170	
cag gac ttc ttc ccc aag gaa	acc aag cca aat ggc	ata ttt aag	3564
Gln Asp Phe Phe Pro Lys Glu	Thr Lys Pro Asn Gly	Ile Phe Lys	
1175	1180	1185	
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Gly Pro Thr Ala Glu Asn Ala	Glu Tyr Leu Arg Val	Ala Pro Pro	
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Leu Ser Leu Gln Arg Met Tyr Asn Asn Cys Glu Val Val Leu Gly Asn
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Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys
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Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val
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Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Ala Leu  
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Tyr Glu Asn Thr Tyr Ala Leu Ala Ile Leu Ser Asn Tyr Gly Thr Asn  
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Arg Thr Gly Leu Arg Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu  
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Ile Gly Ala Val Arg Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp  
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Thr Ile Gln Trp Arg Asp Ile Val Gln Asn Val Phe Met Ser Asn Met  
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Ser Met Asp Leu Gln Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro  
180 185 190

Ser Cys Pro Asn Gly Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln  
195 200 205

Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg  
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Gly Arg Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys  
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Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp  
245 250 255

Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro  
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Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly  
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Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His  
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Gly Ser Cys Val Arg Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu  
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Asp Gly Ile Arg Lys Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val  
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Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn  
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Ala Thr Asn Ile Lys His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp  
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Leu His Ile Leu Pro Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr  
370 375 380

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Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp  
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Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln  
420 425 430

His Gly Gln Phe Ser Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu  
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Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser  
450 455 460

Gly Asn Arg Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu  
465 470 475 480

Phe Gly Thr Pro Asn Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu  
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Lys Asp Cys Lys Ala Val Asn His Val Cys Asn Pro Leu Cys Ser Ser  
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Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro  
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Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val  
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Lys Thr Cys Pro Ala Gly Ile Met Gly Glu Asn Asn Thr Leu Val Trp  
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Lys Tyr Ala Asp Ala Asn Asn Val Cys His Leu Cys His Ala Asn Cys  
610 615 620

Thr Tyr Gly Cys Ala Gly Pro Gly Leu Gln Gly Cys Glu Val Trp Pro  
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Ser Gly Pro Lys Ile Pro Ser Ile Ala Thr Gly Ile Val Gly Gly Leu  
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Leu Phe Ile Val Val Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg  
660 665 670

Arg His Ile Val Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg  
675 680 685

Glu Leu Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala  
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His Leu Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu  
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Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu  
725 730 735

Gly Glu Lys Val Lys Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala  
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Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met  
755 760 765

Ala Ser Val Asp Asn Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu

770																	
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Thr	Pro	Gln	His	Val	Lys	Ile	Thr	Asp	Phe	Gly	Leu	Ala	Lys	Leu	Leu		
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Pro	Lys	Phe	Arg	Glu	Leu	Ile	Leu	Glu	Phe	Ser	Lys	Met	Ala	Arg	Asp		
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Ser	Pro	Thr	Asp	Ser	Asn	Phe	Tyr	Arg	Ala	Leu	Met	Asp	Glu	Glu	Asp		
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Met Glu Asp Val Val Asp Ala Asp Glu Tyr Leu Thr Pro Gln Gln  
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Gly Phe Phe Asn Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser  
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Ser Leu Ser Ala Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asn  
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Arg Asn Gly Ser Cys Arg Val Lys Glu Asp Ala Phe Leu Gln Arg  
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Tyr Ser Ser Asp Pro Thr Gly Ala Val Thr Glu Asp Asn Ile Asp  
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Lys Arg Pro Ala Gly Ser Val Gln Asn Pro Val Tyr His Asn Gln  
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Pro Leu His Pro Ala Pro Gly Arg Asp Leu His Tyr Gln Asn Pro  
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His Ser Asn Ala Val Gly Asn Pro Glu Tyr Leu Asn Thr Ala Gln  
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Pro Thr Cys Leu Ser Ser Gly Phe Asn Ser Pro Ala Leu Trp Ile  
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Ala	Leu	Cys	Ala	Ala	Gly	Gly	Ala	Leu	Glu	Glu	Lys	Lys	Val	Cys	Gln	
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Gly	Thr	Ser	Asn	Arg	Leu	Thr	Gln	Leu	Gly	Thr	Phe	Glu	Asp	His	Phe	
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Leu	Ser	Leu	Gln	Arg	Met	Tyr	Asn	Asn	Cys	Glu	Val	Val	Leu	Gly	Asn	
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acc	atc	cag	gag	gtg	gcc	ggc	tat	gtc	ctc	att	gcc	ctc	aac	acc	gtg	288
Thr	Ile	Gln	Glu	Val	Ala	Gly	Tyr	Val	Leu	Ile	Ala	Leu	Asn	Thr	Val	
				85				90						95		

gag	aga	atc	cct	ttg	gag	aac	ctg	cag	atc	atc	agg	gga	aat	gct	ctt	336
Glu	Arg	Ile	Pro	Leu	Glu	Asn	Leu	Gln	Ile	Ile	Arg	Gly	Asn	Ala	Leu	
			100				105						110			

tat	gaa	aac	acc	tat	gcc	tta	gcc	atc	ctg	tcc	aac	tat	ggg	aca	aac	384
Tyr	Glu	Asn	Thr	Tyr	Ala	Leu	Ala	Ile	Leu	Ser	Asn	Tyr	Gly	Thr	Asn	
		115				120						125				

aga	act	ggg	ctt	agg	gaa	ctg	ccc	atg	cgg	aac	tta	cag	gaa	atc	ctg	432
Arg	Thr	Gly	Leu	Arg	Glu	Leu	Pro	Met	Arg	Asn	Leu	Gln	Glu	Ile	Leu	
	130					135					140					

att ggt gct gtg cga ttc agc aac aac ccc atc ctc tgc aat atg gat Ile Gly Ala Val Arg Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp 145 150 155 160	480
act atc cag tgg agg gac atc gtc caa aac gtc ttt atg agc aac atg Thr Ile Gln Trp Arg Asp Ile Val Gln Asn Val Phe Met Ser Asn Met 165 170 175	528
tca atg gac tta cag agc cat ccg agc agt tgc ccc aaa tgt gat cca Ser Met Asp Leu Gln Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro 180 185 190	576
agc tgt ccc aat gga agc tgc tgg gga gga gga gag gag aac tgc cag Ser Cys Pro Asn Gly Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln 195 200 205	624
aaa ttg acc aaa atc atc tgt gcc cag caa tgt tcc cat cgc tgt cgt Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg 210 215 220	672
ggc agg tcc ccc agt gac tgc tgc cac aac caa tgt gct gcg ggg tgt Gly Arg Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys 225 230 235 240	720
aca ggg ccc cga gag agt gac tgt ctg gtc tgc caa aag ttc caa gat Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp 245 250 255	768
gag gcc aca tgc aaa gac acc tgc cca cca ctc atg ctg tac aac ccc Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro 260 265 270	816
acc acc tat cag atg gat gtc aac cct gaa ggg aag tac agc ttt ggt Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly 275 280 285	864
gcc acc tgt gtg aag aag tgc ccc cga aac tac gtg gtg aca gat cat Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His 290 295 300	912
ggc tca tgt gtc cga gcc tgt ggg cct gac tac tac gaa gtg gaa gaa Gly Ser Cys Val Arg Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu 305 310 315 320	960
gat ggc atc cgc aag tgt aaa aaa tgt gat ggg ccc tgt cgc aaa gtt Asp Gly Ile Arg Lys Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val 325 330 335	1008
tgt aat ggc ata ggc att ggt gaa ttt aaa gac aca ctc tcc ata aat Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn 340 345 350	1056
gct aca aac atc aaa cac ttc aaa tac tgc act gcc atc agc ggg gac Ala Thr Asn Ile Lys His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp 355 360 365	1104

ctt cac atc ctg cca gtg gcc ttt aag ggg gat tct ttc acg cgc act Leu His Ile Leu Pro Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr 370 375 380	1152
cct cct cta gac cca cga gaa cta gaa att cta aaa acc gta aag gaa Pro Pro Leu Asp Pro Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu 385 390 395 400	1200
ata aca ggc ttt ttg ctg att cag gct tgg cct gat aac tgg act gac Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp 405 410 415	1248
ctc cat gct ttc gag aac cta gaa ata ata cgt ggc aga aca aag caa Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln 420 425 430	1296
cat ggt cag ttt tct ttg gcg gtc gtt ggc ctg aac atc aca tca ctg His Gly Gln Phe Ser Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu 435 440 445	1344
ggg ctg cgt tcc ctc aag gag atc agt gat ggg gat gtg atc att tct Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser 450 455 460	1392
gga aac cga aat ttg tgc tac gca aac aca ata aac tgg aaa aaa ctc Gly Asn Arg Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu 465 470 475 480	1440
ttc ggg aca ccc aat cag aaa acc aaa atc atg aac aac aga gct gag Phe Gly Thr Pro Asn Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu 485 490 495	1488
aaa gac tgc aag gcc gtg aac cac gtc tgc aat cct tta tgc tcc tcg Lys Asp Cys Lys Ala Val Asn His Val Cys Asn Pro Leu Cys Ser Ser 500 505 510	1536
gaa ggc tgc tgg ggc cct gag ccc agg gac tgt gtc tcc tgc cag aat Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Gln Asn 515 520 525	1584
gtg agc aga ggc agg gag tgc gtg gag aaa tgc aac atc ctg gag ggg Val Ser Arg Gly Arg Glu Cys Val Glu Lys Cys Asn Ile Leu Glu Gly 530 535 540	1632
gaa cca agg gag ttt gtg gaa aat tct gaa tgc atc cag tgc cat cca Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro 545 550 555 560	1680
gaa tgt ctg ccc cag gcc atg aac atc acc tgt aca ggc agg ggg cca Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro 565 570 575	1728
gac aac tgc atc cag tgt gcc cac tac att gat ggc cca cac tgt gtc Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val 580 585 590	1776
aag acc tgc cca gct ggc atc atg gga gag aac aac act ctg gtc tgg	1824

Lys Thr Cys Pro Ala Gly Ile Met Gly Glu Asn Asn Thr Leu Val Trp  
595 600 605

aag tat gca gat gcc aat aat gtc tgc cac cta tgc cac gcc aac tgt 1872  
Lys Tyr Ala Asp Ala Asn Asn Val Cys His Leu Cys His Ala Asn Cys  
610 615 620

acc tat gga gta atg gtt cct gaa atg ttg ctc caa agt atc att tta 1920  
Thr Tyr Gly Val Met Val Pro Glu Met Leu Leu Gln Ser Ile Ile Leu  
625 630 635 640

aaa cct att tga 1932  
Lys Pro Ile

<210> 16

<211> 643

<212> PRT

<213> Đ;ÊÓ(Mus musculus)

<400> 16

Met Arg Pro Ser Gly Thr Ala Arg Thr Thr Leu Leu Val Leu Leu Thr  
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Ala Leu Cys Ala Ala Gly Gly Ala Leu Glu Glu Lys Lys Val Cys Gln  
20 25 30

Gly Thr Ser Asn Arg Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe  
35 40 45

Leu Ser Leu Gln Arg Met Tyr Asn Asn Cys Glu Val Val Leu Gly Asn  
50 55 60

Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys  
65 70 75 80

Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val  
85 90 95

Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Ala Leu  
100 105 110

Tyr Glu Asn Thr Tyr Ala Leu Ala Ile Leu Ser Asn Tyr Gly Thr Asn

115

120

125

Arg Thr Gly Leu Arg Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu  
 130 135 140

Ile Gly Ala Val Arg Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp  
 145 150 155 160

Thr Ile Gln Trp Arg Asp Ile Val Gln Asn Val Phe Met Ser Asn Met  
 165 170 175

Ser Met Asp Leu Gln Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro  
 180 185 190

Ser Cys Pro Asn Gly Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln  
 195 200 205

Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg  
 210 215 220

Gly Arg Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys  
 225 230 235 240

Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp  
 245 250 255

Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro  
 260 265 270

Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly  
 275 280 285

Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His  
 290 295 300

Gly Ser Cys Val Arg Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu  
 305 310 315 320

Asp Gly Ile Arg Lys Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val  
 325 330 335

Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn  
 340 345 350

Ala Thr Asn Ile Lys His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp  
355 360 365

Leu His Ile Leu Pro Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr  
370 375 380

Pro Pro Leu Asp Pro Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu  
385 390 395 400

Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp  
405 410 415

Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln  
420 425 430

His Gly Gln Phe Ser Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu  
435 440 445

Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser  
450 455 460

Gly Asn Arg Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu  
465 470 475 480

Phe Gly Thr Pro Asn Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu  
485 490 495

Lys Asp Cys Lys Ala Val Asn His Val Cys Asn Pro Leu Cys Ser Ser  
500 505 510

Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Gln Asn  
515 520 525

Val Ser Arg Gly Arg Glu Cys Val Glu Lys Cys Asn Ile Leu Glu Gly  
530 535 540

Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro  
545 550 555 560

Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro  
565 570 575

Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val  
580 585 590

Lys Thr Cys Pro Ala Gly Ile Met Gly Glu Asn Asn Thr Leu Val Trp  
595 600 605

Lys Tyr Ala Asp Ala Asn Asn Val Cys His Leu Cys His Ala Asn Cys  
610 615 620

Thr Tyr Gly Val Met Val Pro Glu Met Leu Leu Gln Ser Ile Ile Leu  
625 630 635 640

Lys Pro Ile

<210> 17

<211> 1968

<212> DNA

<213> Ð;Éó (Mus musculus)

<220>

<221> CDS

<222> (1)..(1965)

<223>

<400> 17

atg	cga	ccc	tca	ggg	acc	gcg	aga	acc	aca	ctg	ctg	gtg	ctg	ctg	acc	48
Met	Arg	Pro	Ser	Gly	Thr	Ala	Arg	Thr	Thr	Leu	Leu	Val	Leu	Leu	Thr	
1				5				10						15		

gcg	ctc	tgc	gcc	gca	ggt	ggg	gcg	ttg	gag	gaa	aag	aaa	gtc	tgc	caa	96
Ala	Leu	Cys	Ala	Ala	Gly	Gly	Ala	Leu	Glu	Glu	Lys	Lys	Val	Cys	Gln	
			20				25						30			

ggc	aca	agt	aac	agg	ctc	acc	caa	ctg	ggc	act	ttt	gaa	gac	cac	ttt	144
Gly	Thr	Ser	Asn	Arg	Leu	Thr	Gln	Leu	Gly	Thr	Phe	Glu	Asp	His	Phe	
		35					40					45				

ctg	agc	ctg	cag	agg	atg	tac	aac	aac	tgt	gaa	gtg	gtc	ctt	ggg	aac	192
Leu	Ser	Leu	Gln	Arg	Met	Tyr	Asn	Asn	Cys	Glu	Val	Val	Leu	Gly	Asn	
		50				55					60					



ttg gaa att acc tat gtg caa agg aat tac gac ctt tcc ttc tta aag Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys 65 70 75 80	240
acc atc cag gag gtg gcc ggc tat gtc ctc att gcc ctc aac acc gtg Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val 85 90 95	288
gag aga atc cct ttg gag aac ctg cag atc atc agg gga aat gct ctt Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Ala Leu 100 105 110	336
tat gaa aac acc tat gcc tta gcc atc ctg tcc aac tat ggg aca aac Tyr Glu Asn Thr Tyr Ala Leu Ala Ile Leu Ser Asn Tyr Gly Thr Asn 115 120 125	384
aga act ggg ctt agg gaa ctg ccc atg cgg aac tta cag gaa atc ctg Arg Thr Gly Leu Arg Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu 130 135 140	432
att ggt gct gtg cga ttc agc aac aac ccc atc ctc tgc aat atg gat Ile Gly Ala Val Arg Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp 145 150 155 160	480
act atc cag tgg agg gac atc gtc caa aac gtc ttt atg agc aac atg Thr Ile Gln Trp Arg Asp Ile Val Gln Asn Val Phe Met Ser Asn Met 165 170 175	528
tca atg gac tta cag agc cat ccg agc agt tgc ccc aaa tgt gat cca Ser Met Asp Leu Gln Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro 180 185 190	576
agc tgt ccc aat gga agc tgc tgg gga gga gga gag gag aac tgc cag Ser Cys Pro Asn Gly Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln 195 200 205	624
aaa ttg acc aaa atc atc tgt gcc cag caa tgt tcc cat cgc tgt cgt Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg 210 215 220	672
ggc agg tcc ccc agt gac tgc tgc cac aac caa tgt gct gcg ggg tgt Gly Arg Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys 225 230 235 240	720
aca ggg ccc cga gag agt gac tgt ctg gtc tgc caa aag ttc caa gat Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp 245 250 255	768
gag gcc aca tgc aaa gac acc tgc cca cca ctc atg ctg tac aac ccc Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro 260 265 270	816
acc acc tat cag atg gat gtc aac cct gaa ggg aag tac agc ttt ggt Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly 275 280 285	864

gcc acc tgt gtg aag aag tgc ccc cga aac tac gtg gtg aca gat cat Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His 290 295 300	912
ggc tca tgt gtc cga gcc tgt ggg cct gac tac tac gaa gtg gaa gaa Gly Ser Cys Val Arg Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu 305 310 315 320	960
gat ggc atc cgc aag tgt aaa aaa tgt gat ggg ccc tgt cgc aaa gtt Asp Gly Ile Arg Lys Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val 325 330 335	1008
tgt aat ggc ata ggc att ggt gaa ttt aaa gac aca ctc tcc ata aat Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn 340 345 350	1056
gct aca aac atc aaa cac ttc aaa tac tgc act gcc atc agc ggg gac Ala Thr Asn Ile Lys His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp 355 360 365	1104
ctt cac atc ctg cca gtg gcc ttt aag ggg gat tct ttc acg cgc act Leu His Ile Leu Pro Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr 370 375 380	1152
cct cct cta gac cca cga gaa cta gaa att cta aaa acc gta aag gaa Pro Pro Leu Asp Pro Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu 385 390 395 400	1200
ata aca ggc ttt ttg ctg att cag gct tgg cct gat aac tgg act gac Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp 405 410 415	1248
ctc cat gct ttc gag aac cta gaa ata ata cgt ggc aga aca aag caa Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln 420 425 430	1296
cat ggt cag ttt tct ttg gcg gtc gtt ggc ctg aac atc aca tca ctg His Gly Gln Phe Ser Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu 435 440 445	1344
ggg ctg cgt tcc ctc aag gag atc agt gat ggg gat gtg atc att tct Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser 450 455 460	1392
gga aac cga aat ttg tgc tac gca aac aca ata aac tgg aaa aaa ctc Gly Asn Arg Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu 465 470 475 480	1440
ttc ggg aca ccc aat cag aaa acc aaa atc atg aac aac aga gct gag Phe Gly Thr Pro Asn Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu 485 490 495	1488
aaa gac tgc aag gcc gtg aac cac gtc tgc aat cct tta tgc tcc tcg Lys Asp Cys Lys Ala Val Asn His Val Cys Asn Pro Leu Cys Ser Ser 500 505 510	1536
gaa ggc tgc tgg ggc cct gag ccc agg gac tgt gtc tcc tgc cag aat	1584

Glu	Gly	Cys	Trp	Gly	Pro	Glu	Pro	Arg	Asp	Cys	Val	Ser	Cys	Gln	Asn		
		515					520					525					
gtg	agc	aga	ggc	agg	gag	tgc	gtg	gag	aaa	tgc	aac	atc	ctg	gag	ggg	1632	
Val	Ser	Arg	Gly	Arg	Glu	Cys	Val	Glu	Lys	Cys	Asn	Ile	Leu	Glu	Gly		
		530				535					540						
gaa	cca	agg	gag	ttt	gtg	gaa	aat	tct	gaa	tgc	atc	cag	tgc	cat	cca	1680	
Glu	Pro	Arg	Glu	Phe	Val	Glu	Asn	Ser	Glu	Cys	Ile	Gln	Cys	His	Pro		
545					550					555					560		
gaa	tgt	ctg	ccc	cag	gcc	atg	aac	atc	acc	tgt	aca	ggc	agg	ggg	cca	1728	
Glu	Cys	Leu	Pro	Gln	Ala	Met	Asn	Ile	Thr	Cys	Thr	Gly	Arg	Gly	Pro		
				565					570					575			
gac	aac	tgc	atc	cag	tgt	gcc	cac	tac	att	gat	ggc	cca	cac	tgt	gtc	1776	
Asp	Asn	Cys	Ile	Gln	Cys	Ala	His	Tyr	Ile	Asp	Gly	Pro	His	Cys	Val		
			580					585					590				
aag	acc	tgc	cca	gct	ggc	atc	atg	gga	gag	aac	aac	act	ctg	gtc	tgg	1824	
Lys	Thr	Cys	Pro	Ala	Gly	Ile	Met	Gly	Glu	Asn	Asn	Thr	Leu	Val	Trp		
		595					600					605					
aag	tat	gca	gat	gcc	aat	aat	gtc	tgc	cac	cta	tgc	cac	gcc	aac	tgt	1872	
Lys	Tyr	Ala	Asp	Ala	Asn	Asn	Val	Cys	His	Leu	Cys	His	Ala	Asn	Cys		
		610				615					620						
acc	tat	gga	tgt	gct	ggg	cca	ggt	ctt	caa	gga	tgt	gaa	gtg	tgg	cca	1920	
Thr	Tyr	Gly	Cys	Ala	Gly	Pro	Gly	Leu	Gln	Gly	Cys	Glu	Val	Trp	Pro		
625					630					635					640		
tct	ggg	tac	gtt	caa	tgg	cag	tgg	atc	tta	aag	acc	ttt	tgg	atc	taa	1968	
Ser	Gly	Tyr	Val	Gln	Trp	Gln	Trp	Ile	Leu	Lys	Thr	Phe	Trp	Ile			
				645					650					655			

<210> 18

<211> 655

<212> PRT

<213> Ð;Êó (Mus musculus)

<400> 18

Met	Arg	Pro	Ser	Gly	Thr	Ala	Arg	Thr	Thr	Leu	Leu	Val	Leu	Leu	Thr
1				5					10					15	

Ala	Leu	Cys	Ala	Ala	Gly	Gly	Ala	Leu	Glu	Glu	Lys	Lys	Val	Cys	Gln
			20					25					30		

Gly Thr Ser Asn Arg Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe

35

40

45

Leu Ser Leu Gln Arg Met Tyr Asn Asn Cys Glu Val Val Leu Gly Asn  
50 55 60

Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys  
65 70 75 80

Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val  
85 90 95

Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Ala Leu  
100 105 110

Tyr Glu Asn Thr Tyr Ala Leu Ala Ile Leu Ser Asn Tyr Gly Thr Asn  
115 120 125

Arg Thr Gly Leu Arg Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu  
130 135 140

Ile Gly Ala Val Arg Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp  
145 150 155 160

Thr Ile Gln Trp Arg Asp Ile Val Gln Asn Val Phe Met Ser Asn Met  
165 170 175

Ser Met Asp Leu Gln Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro  
180 185 190

Ser Cys Pro Asn Gly Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln  
195 200 205

Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg  
210 215 220

Gly Arg Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys  
225 230 235 240

Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp  
245 250 255

Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro  
260 265 270

Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly  
275 280 285

Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His  
290 295 300

Gly Ser Cys Val Arg Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu  
305 310 315 320

Asp Gly Ile Arg Lys Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val  
325 330 335

Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn  
340 345 350

Ala Thr Asn Ile Lys His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp  
355 360 365

Leu His Ile Leu Pro Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr  
370 375 380

Pro Pro Leu Asp Pro Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu  
385 390 395 400

Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp  
405 410 415

Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln  
420 425 430

His Gly Gln Phe Ser Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu  
435 440 445

Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser  
450 455 460

Gly Asn Arg Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu  
465 470 475 480

Phe Gly Thr Pro Asn Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu  
485 490 495

Lys Asp Cys Lys Ala Val Asn His Val Cys Asn Pro Leu Cys Ser Ser  
500 505 510

Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Gln Asn  
515 520 525

Val Ser Arg Gly Arg Glu Cys Val Glu Lys Cys Asn Ile Leu Glu Gly  
530 535 540

Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro  
545 550 555 560

Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro  
565 570 575

Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val  
580 585 590

Lys Thr Cys Pro Ala Gly Ile Met Gly Glu Asn Asn Thr Leu Val Trp  
595 600 605

Lys Tyr Ala Asp Ala Asn Asn Val Cys His Leu Cys His Ala Asn Cys  
610 615 620

Thr Tyr Gly Cys Ala Gly Pro Gly Leu Gln Gly Cys Glu Val Trp Pro  
625 630 635 640

Ser Gly Tyr Val Gln Trp Gln Trp Ile Leu Lys Thr Phe Trp Ile  
645 650 655

<210> 19

<211> 1962

<212> DNA

<213> ¼

<220>

<221> CDS

<222> (1)..(1962)

<223>

<400> 19

atg	ggt	gta	cgc	agc	ccc	ctg	tcc	gcc	tct	ggg	cct	cgc	ggg	gcc	gct	48
Met	Gly	Val	Arg	Ser	Pro	Leu	Ser	Ala	Ser	Gly	Pro	Arg	Gly	Ala	Ala	
1				5					10					15		

gtc	ctg	gtg	cta	ctg	ctg	ctg	ggc	gtc	gcg	ctg	tgt	tcc	gcc	gtg	gag	96
Val	Leu	Val	Leu	Leu	Leu	Leu	Gly	Val	Ala	Leu	Cys	Ser	Ala	Val	Glu	
			20					25					30			

gag	aag	aaa	gtt	tgt	caa	ggg	aca	aat	aac	aag	ttg	acc	cag	ctg	ggg	144
Glu	Lys	Lys	Val	Cys	Gln	Gly	Thr	Asn	Asn	Lys	Leu	Thr	Gln	Leu	Gly	
		35					40					45				

cac	gtg	gaa	gac	cat	ttc	acc	agc	ctg	cag	aga	atg	tac	aac	aac	tgc	192
His	Val	Glu	Asp	His	Phe	Thr	Ser	Leu	Gln	Arg	Met	Tyr	Asn	Asn	Cys	
	50					55					60					

gaa	gtg	gta	ctg	agt	aac	ctg	gag	att	acc	tac	gtg	gag	cat	aat	cgc	240
Glu	Val	Val	Leu	Ser	Asn	Leu	Glu	Ile	Thr	Tyr	Val	Glu	His	Asn	Arg	
65					70					75					80	

gat	ctc	acc	ttc	ctt	aag	acc	ata	cag	gag	gtt	gca	ggc	tat	gtg	ctc	288
Asp	Leu	Thr	Phe	Leu	Lys	Thr	Ile	Gln	Glu	Val	Ala	Gly	Tyr	Val	Leu	
				85					90					95		

att	gcg	ctt	aac	atg	gtg	gac	gtc	att	ccc	tta	gaa	aac	ctc	cag	att	336
Ile	Ala	Leu	Asn	Met	Val	Asp	Val	Ile	Pro	Leu	Glu	Asn	Leu	Gln	Ile	
			100					105					110			

atc	cga	ggg	aat	gtg	ctt	tat	gac	aac	tct	ttt	gcc	ctg	gca	gtt	tta	384
Ile	Arg	Gly	Asn	Val	Leu	Tyr	Asp	Asn	Ser	Phe	Ala	Leu	Ala	Val	Leu	
		115					120					125				

tcc	aat	tac	cac	atg	aat	aaa	acc	cag	gga	ctt	cga	gag	ctg	cca	atg	432
Ser	Asn	Tyr	His	Met	Asn	Lys	Thr	Gln	Gly	Leu	Arg	Glu	Leu	Pro	Met	
	130					135					140					

aaa	cgg	cta	tca	gaa	att	ctc	aat	gga	ggt	gtt	aaa	atc	agc	aac	aac	480
Lys	Arg	Leu	Ser	Glu	Ile	Leu	Asn	Gly	Gly	Val	Lys	Ile	Ser	Asn	Asn	
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ccc	aaa	ctg	tgc	aac	atg	gac	act	gtt	ctc	tgg	aat	gac	atc	att	gat	528
Pro	Lys	Leu	Cys	Asn	Met	Asp	Thr	Val	Leu	Trp	Asn	Asp	Ile	Ile	Asp	
				165					170					175		

aca	agc	agg	aag	cct	ctc	aca	gta	ctt	gac	ttt	gca	agc	aat	ctt	tct	576
Thr	Ser	Arg	Lys	Pro	Leu	Thr	Val	Leu	Asp	Phe	Ala	Ser	Asn	Leu	Ser	
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tct	tgt	cca	aaa	tgc	cat	ccg	aac	tgc	aca	gaa	gac	cac	tgc	tgg	ggt	624
Ser	Cys	Pro	Lys	Cys	His	Pro	Asn	Cys	Thr	Glu	Asp	His	Cys	Trp	Gly	
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caa tgc tct ggc cgg tgc aga gga aag gtg ccc agt gac tgc tgc cac Gln Cys Ser Gly Arg Cys Arg Gly Lys Val Pro Ser Asp Cys Cys His 225 230 235 240	720
aat cag tgt gct gca ggg tgc aca gga cct cgg gag agt gac tgc ctg Asn Gln Cys Ala Ala Gly Cys Thr Gly Pro Arg Glu Ser Asp Cys Leu 245 250 255	768
gca tgc cgc aag ttt cgg gat gat gct acc tgc aag gac aca tgt ccc Ala Cys Arg Lys Phe Arg Asp Asp Ala Thr Cys Lys Asp Thr Cys Pro 260 265 270	816
cca ctg gtc ctc tat aac ccc acc acc tat caa atg gat gtc aac cct Pro Leu Val Leu Tyr Asn Pro Thr Thr Tyr Gln Met Asp Val Asn Pro 275 280 285	864
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gat act tac gaa gtg gaa gaa aat ggt gtt cgg aag tgt aaa aaa tgt Asp Thr Tyr Glu Val Glu Glu Asn Gly Val Arg Lys Cys Lys Lys Cys 325 330 335	1008
gat ggg cta tgt agc aaa gtg tgc aat ggc att gga ata ggt gaa ctt Asp Gly Leu Cys Ser Lys Val Cys Asn Gly Ile Gly Ile Gly Glu Leu 340 345 350	1056
aaa ggg atc cta tcc ata aat gcc aca aac atc gac tcc ttc aaa aac Lys Gly Ile Leu Ser Ile Asn Ala Thr Asn Ile Asp Ser Phe Lys Asn 355 360 365	1104
tgt acg aag atc aat ggg gat gtc agc att ctt cct gtt gca ttt cta Cys Thr Lys Ile Asn Gly Asp Val Ser Ile Leu Pro Val Ala Phe Leu 370 375 380	1152
ggg gat gcc ttc aca aag aca cta ccc ctt gac cct aag aag ctg gat Gly Asp Ala Phe Thr Lys Thr Leu Pro Leu Asp Pro Lys Lys Leu Asp 385 390 395 400	1200
gtc ttt aga aca gtc aaa gaa ata tca gga ttt ttg ttg att cag gcc Val Phe Arg Thr Val Lys Glu Ile Ser Gly Phe Leu Leu Ile Gln Ala 405 410 415	1248
tgg cct gat aat gct act gat ctc tat gct ttt gaa aat ctg gag att Trp Pro Asp Asn Ala Thr Asp Leu Tyr Ala Phe Glu Asn Leu Glu Ile 420 425 430	1296
atc cga ggc cga acc aag cag cac ggc cag tat tcc ctt gct gtt gtt	1344



Ile	Arg	Gly	Arg	Thr	Lys	Gln	His	Gly	Gln	Tyr	Ser	Leu	Ala	Val	Val		
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aac	ttg	aaa	ata	cag	tcg	ttg	ggg	ctg	cgc	tcc	ctc	aag	gaa	ata	agt	1392	
Asn	Leu	Lys	Ile	Gln	Ser	Leu	Gly	Leu	Arg	Ser	Leu	Lys	Glu	Ile	Ser		
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Thr	Met	Asn	Trp	Arg	Ser	Leu	Phe	Ala	Thr	Gln	Ser	Gln	Lys	Thr	Lys		
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Ile	Ile	Gln	Asn	Arg	Asn	Lys	Asn	Asp	Cys	Thr	Ala	Asp	Arg	His	Val		
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Cys	Asp	Pro	Leu	Cys	Ser	Asp	Val	Gly	Cys	Trp	Gly	Pro	Gly	Pro	Phe		
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cag	tgc	aac	atc	ctg	caa	ggg	gag	cca	cgt	gag	ttt	gaa	aga	gac	tcc	1680	
Gln	Cys	Asn	Ile	Leu	Gln	Gly	Glu	Pro	Arg	Glu	Phe	Glu	Arg	Asp	Ser		
		545			550				555						560		
aaa	tgc	ctc	ccc	tgc	cac	tca	gag	tgt	ctg	gta	cag	aac	tcc	act	gca	1728	
Lys	Cys	Leu	Pro	Cys	His	Ser	Glu	Cys	Leu	Val	Gln	Asn	Ser	Thr	Ala		
				565					570					575			
tac	aac	aca	acc	tgc	tct	gga	ccg	ggc	cca	gac	cac	tgc	atg	aag	tgt	1776	
Tyr	Asn	Thr	Thr	Cys	Ser	Gly	Pro	Gly	Pro	Asp	His	Cys	Met	Lys	Cys		
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Ala	His	Phe	Ile	Asp	Gly	Pro	His	Cys	Val	Lys	Ala	Cys	Pro	Ala	Gly		
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gtc	ctg	ggt	gag	aat	gat	acc	ctg	gtc	tgg	aag	tat	gca	gat	gcc	aat	1872	
Val	Leu	Gly	Glu	Asn	Asp	Thr	Leu	Val	Trp	Lys	Tyr	Ala	Asp	Ala	Asn		
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gct	gtt	tgc	cag	ctc	tgc	cat	cca	aac	tgt	aca	cga	ggg	tgc	aaa	ggg	1920	
Ala	Val	Cys	Gln	Leu	Cys	His	Pro	Asn	Cys	Thr	Arg	Gly	Cys	Lys	Gly		
		625			630				635						640		
cca	ggt	ctt	gaa	gga	tgt	cca	aat	ggc	tcc	aaa	act	cca	tct			1962	
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35 40 45

His Val Glu Asp His Phe Thr Ser Leu Gln Arg Met Tyr Asn Asn Cys  
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Glu Val Val Leu Ser Asn Leu Glu Ile Thr Tyr Val Glu His Asn Arg  
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Asp Leu Thr Phe Leu Lys Thr Ile Gln Glu Val Ala Gly Tyr Val Leu  
85 90 95

Ile Ala Leu Asn Met Val Asp Val Ile Pro Leu Glu Asn Leu Gln Ile  
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Ile Arg Gly Asn Val Leu Tyr Asp Asn Ser Phe Ala Leu Ala Val Leu  
115 120 125

Ser Asn Tyr His Met Asn Lys Thr Gln Gly Leu Arg Glu Leu Pro Met  
130 135 140

Lys Arg Leu Ser Glu Ile Leu Asn Gly Gly Val Lys Ile Ser Asn Asn  
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Pro Lys Leu Cys Asn Met Asp Thr Val Leu Trp Asn Asp Ile Ile Asp  
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Thr Ser Arg Lys Pro Leu Thr Val Leu Asp Phe Ala Ser Asn Leu Ser  
180 185 190

Ser Cys Pro Lys Cys His Pro Asn Cys Thr Glu Asp His Cys Trp Gly  
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Ala Gly Glu Gln Asn Cys Gln Thr Leu Thr Lys Val Ile Cys Ala Gln  
210 215 220

Gln Cys Ser Gly Arg Cys Arg Gly Lys Val Pro Ser Asp Cys Cys His  
225 230 235 240

Asn Gln Cys Ala Ala Gly Cys Thr Gly Pro Arg Glu Ser Asp Cys Leu  
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Ala Cys Arg Lys Phe Arg Asp Asp Ala Thr Cys Lys Asp Thr Cys Pro  
260 265 270

Pro Leu Val Leu Tyr Asn Pro Thr Thr Tyr Gln Met Asp Val Asn Pro  
275 280 285

Glu Gly Lys Tyr Ser Phe Gly Ala Thr Cys Val Arg Glu Cys Pro His  
290 295 300

Asn Tyr Val Val Thr Asp His Gly Ser Cys Val Arg Ser Cys Asn Thr  
305 310 315 320

Asp Thr Tyr Glu Val Glu Glu Asn Gly Val Arg Lys Cys Lys Lys Cys  
325 330 335

Asp Gly Leu Cys Ser Lys Val Cys Asn Gly Ile Gly Ile Gly Glu Leu  
340 345 350

Lys Gly Ile Leu Ser Ile Asn Ala Thr Asn Ile Asp Ser Phe Lys Asn  
355 360 365

Cys Thr Lys Ile Asn Gly Asp Val Ser Ile Leu Pro Val Ala Phe Leu  
370 375 380

Gly Asp Ala Phe Thr Lys Thr Leu Pro Leu Asp Pro Lys Lys Leu Asp  
385 390 395 400

Val Phe Arg Thr Val Lys Glu Ile Ser Gly Phe Leu Leu Ile Gln Ala  
405 410 415

Trp Pro Asp Asn Ala Thr Asp Leu Tyr Ala Phe Glu Asn Leu Glu Ile  
420 425 430

Ile Arg Gly Arg Thr Lys Gln His Gly Gln Tyr Ser Leu Ala Val Val  
435 440 445

Asn Leu Lys Ile Gln Ser Leu Gly Leu Arg Ser Leu Lys Glu Ile Ser  
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Asp Gly Asp Ile Ala Ile Met Lys Asn Lys Asn Leu Cys Tyr Ala Asp  
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Thr Met Asn Trp Arg Ser Leu Phe Ala Thr Gln Ser Gln Lys Thr Lys  
485 490 495

Ile Ile Gln Asn Arg Asn Lys Asn Asp Cys Thr Ala Asp Arg His Val  
500 505 510

Cys Asp Pro Leu Cys Ser Asp Val Gly Cys Trp Gly Pro Gly Pro Phe  
515 520 525

His Cys Phe Ser Cys Arg Phe Phe Ser Arg Gln Lys Glu Cys Val Lys  
530 535 540

Gln Cys Asn Ile Leu Gln Gly Glu Pro Arg Glu Phe Glu Arg Asp Ser  
545 550 555 560

Lys Cys Leu Pro Cys His Ser Glu Cys Leu Val Gln Asn Ser Thr Ala  
565 570 575

Tyr Asn Thr Thr Cys Ser Gly Pro Gly Pro Asp His Cys Met Lys Cys  
580 585 590

Ala His Phe Ile Asp Gly Pro His Cys Val Lys Ala Cys Pro Ala Gly  
595 600 605

Val Leu Gly Glu Asn Asp Thr Leu Val Trp Lys Tyr Ala Asp Ala Asn  
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Ser Ser Ser Ile Leu Ser Val Leu Leu Ile Leu Ala Cys Met Ala Ser	
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Ile Thr Thr Ser Ser Ser Val Ser Asn Ala Gly Tyr Val Asp Asn Gly	
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aat atg aaa gtc tgc atc ggc act aaa tct cgg ctc tcc gtg ccc tcc	192
Asn Met Lys Val Cys Ile Gly Thr Lys Ser Arg Leu Ser Val Pro Ser	
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Asn Lys Glu His His Tyr Arg Asn Leu Arg Asp Arg Tyr Thr Asn Cys	
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Thr Tyr Val Asp Gly Asn Leu Lys Leu Thr Trp Leu Pro Asn Glu Asn	
85 90 95	

ttg gac ctc agc ttc cta gac aac ata cgg gag gtc acc ggc tat att	336
Leu Asp Leu Ser Phe Leu Asp Asn Ile Arg Glu Val Thr Gly Tyr Ile	
100 105 110	

ctg atc agt cat gtg gac gtt aag aaa gtg gtg ttt ccc aaa cta caa	384
Leu Ile Ser His Val Asp Val Lys Lys Val Val Phe Pro Lys Leu Gln	
115 120 125	

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gcc gga ggt cgt tgc tat gga cca aag ccg cgg gag tgt tgt cac ctc Ala Gly Gly Arg Cys Tyr Gly Pro Lys Pro Arg Glu Cys Cys His Leu 245 250 255	768
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Arg	Asn	Cys	Thr	Val	Ile	Asp	Gly	Asn	Ile	Arg	Ile	Leu	Asp	Gln	Thr		
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Phe	Ser	Gly	Phe	Gln	Asp	Val	Tyr	Ala	Asn	Tyr	Thr	Met	Gly	Pro	Arg		
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Tyr	Ile	Pro	Leu	Asp	Pro	Glu	Arg	Arg	Glu	Val	Phe	Ser	Thr	Val	Lys		
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Asn	Leu	Ser	Tyr	Phe	Arg	Asn	Leu	Glu	Thr	Ile	His	Gly	Arg	Gln	Leu		
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Ser	Leu	Glu	Met	Arg	Asn	Leu	Lys	Gln	Ile	Ser	Ser	Gly	Ser	Val	Val		
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Ile	Gln	His	Asn	Arg	Asp	Leu	Cys	Tyr	Val	Ser	Asn	Ile	Arg	Trp	Pro		
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Ala	Ile	Gln	Lys	Glu	Pro	Glu	Gln	Lys	Val	Trp	Val	Asn	Glu	Asn	Leu		
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Arg	Ala	Asp	Leu	Cys	Glu	Lys	Asn	Gly	Thr	Ile	Cys	Ser	Asp	Gln	Cys		
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Lys	Asn	Phe	Asn	Phe	Asn	Gly	Thr	Cys	Ile	Ala	Asp	Cys	Gly	Tyr	Ile		
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Glu	Cys	Arg	Thr	Cys	Asn	Gly	Ala	Gly	Ala	Asp	His	Cys	Gln	Glu	Cys		

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595 600 605															
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Cys Asn Leu Ala Ile Ile Asn Asn Asp Ala Thr Val Lys Arg Cys Leu															
645 650 655															
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Leu Lys Asp Asp Lys Cys Pro Asp Gly Tyr Phe Trp Glu Tyr Val His															
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Cys Phe Gln Arg His Pro Glu Cys Asn Gly Cys Thr Gly Pro Gly Ala															
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755 760 765															
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Thr Gly Pro Tyr Val Asn Ser Thr Met Phe Asn Cys Thr Ser Lys Cys															
770 775 780															
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Pro Leu Glu Met Arg His Val Asn Tyr Gln Tyr Thr Ala Ile Gly Pro															
785 790 795 800															
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Tyr Cys Ala Ala Ser Pro Pro Arg Ser Ser Lys Ile Thr Ala Asn Leu															
805 810 815															



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gcc aag aag gaa aca gtc aag atg acc atg gct ctg tct ggc tgc gag Ala Lys Lys Glu Thr Val Lys Met Thr Met Ala Leu Ser Gly Cys Glu 850 855 860	2592
gat tcc gag ccg ctg cgt ccc tcg aac att gga gcc aac cta tgc aag Asp Ser Glu Pro Leu Arg Pro Ser Asn Ile Gly Ala Asn Leu Cys Lys 865 870 875 880	2640
ttg cgc att gtc aag gac gcc gag ttg cgc aag ggc gga gtc ctt gga Leu Arg Ile Val Lys Asp Ala Glu Leu Arg Lys Gly Gly Val Leu Gly 885 890 895	2688
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Thr Tyr Val Asp Gly Asn Leu Lys Leu Thr Trp Leu Pro Asn Glu Asn  
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Pro	Lys	Asn	Cys	Gln	Lys	Phe	Ser	Lys	Leu	Thr	Cys	Ser	Pro	Gln	Cys
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Ala	Gly	Gly	Arg	Cys	Tyr	Gly	Pro	Lys	Pro	Arg	Glu	Cys	Cys	His	Leu
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Leu	Leu	Arg	Asp	Asn	Gly	Ala	Cys	Val	Arg	Ser	Cys	Pro	Gln	Asp	Lys
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Glu Ile Thr Gly Tyr Leu Asn Ile Glu Gly Thr His Pro Gln Phe Arg  
420 425 430

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Met Glu Ser Met Phe Ala Ala Leu Ala Ile Val Lys Ser Ser Leu Tyr  
450 455 460

Ser Leu Glu Met Arg Asn Leu Lys Gln Ile Ser Ser Gly Ser Val Val  
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Ile Gln His Asn Arg Asp Leu Cys Tyr Val Ser Asn Ile Arg Trp Pro  
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Ala Ile Gln Lys Glu Pro Glu Gln Lys Val Trp Val Asn Glu Asn Leu  
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Arg Ala Asp Leu Cys Glu Lys Asn Gly Thr Ile Cys Ser Asp Gln Cys  
515 520 525

Asn Glu Asp Gly Cys Trp Gly Ala Gly Thr Asp Gln Cys Leu Thr Cys  
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Lys Asn Phe Asn Phe Asn Gly Thr Cys Ile Ala Asp Cys Gly Tyr Ile  
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Ser Asn Ala Tyr Lys Phe Asp Asn Arg Thr Cys Lys Ile Cys His Pro  
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Glu Cys Arg Thr Cys Asn Gly Ala Gly Ala Asp His Cys Gln Glu Cys  
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Val His Val Arg Asp Gly Gln His Cys Val Ser Glu Cys Pro Lys Asn  
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Lys Tyr Asn Asp Arg Gly Val Cys Arg Glu Cys His Ala Thr Cys Asp  
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Tyr Cys Ala Ala Ser Pro Pro Arg Ser Ser Lys Ile Thr Ala Asn Leu  
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Glu Asn Val Lys Ile Pro Val Ala Ile Lys Glu Leu Leu Lys Ser Thr  
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Gly Ala Glu Ser Ser Glu Glu Phe Leu Arg Glu Ala Tyr Ile Met Ala  
930 935 940

Ser Glu Glu His Val Asn Leu Leu Lys Leu Leu Ala Val Cys Met Ser  
945 950 955 960

Ser Gln Met Met Leu Ile Thr Gln Leu Met Pro Leu Gly Cys Leu Leu  
965 970 975

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Asn Trp Ser Thr Gln Ile Ala Lys Gly Met Ser Tyr Leu Glu Glu Lys  
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Arg Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Gln  
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Thr Pro Ser Leu Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu  
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Pro Ile Lys Trp Leu Ala Leu Glu Cys Ile Arg Asn Arg Val Phe

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Asp Ile Pro Asp Leu Ile Glu Val Gly Leu Lys Leu Glu Gln Pro				
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1115		1120		1125
His Leu Asp Ala Ala Met Arg Pro Thr Phe Lys Gln Leu Thr Thr				
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Val Phe Ala Glu Phe Ala Arg Asp Pro Gly Arg Tyr Leu Ala Ile				
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Pro Gly Asp Lys Phe Thr Arg Leu Pro Ala Tyr Thr Ser Gln Asp				
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Glu Lys Asp Leu Ile Arg Lys Leu Ala Pro Thr Thr Asp Gly Ser				
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tgt acg tat gtg gat ggc aac ttg aaa ctg acc tgg cta ccc aac gag Cys Thr Tyr Val Asp Gly Asn Leu Lys Leu Thr Trp Leu Pro Asn Glu 130 135 140	432
aat ttg gac ctc agc ttc cta gac aac ata cgg gag gtc acc ggc tat Asn Leu Asp Leu Ser Phe Leu Asp Asn Ile Arg Glu Val Thr Gly Tyr 145 150 155 160	480
att ctg atc agt cat gtg gac gtt aag aaa gtg gtg ttt ccc aaa cta Ile Leu Ile Ser His Val Asp Val Lys Lys Val Val Phe Pro Lys Leu 165 170 175	528
caa atc att cgc gga cgc acg ctg ttc agc tta tcc gtg gag gag gag Gln Ile Ile Arg Gly Arg Thr Leu Phe Ser Leu Ser Val Glu Glu Glu 180 185 190	576
aag tat gcc ttg ttc gtc act tat tcc aaa atg tac acg ctg gag att Lys Tyr Ala Leu Phe Val Thr Tyr Ser Lys Met Tyr Thr Leu Glu Ile 195 200 205	624
ccc gat cta cgc gat gtc tta aat ggc caa gtg ggc ttc cac aac aac Pro Asp Leu Arg Asp Val Leu Asn Gly Gln Val Gly Phe His Asn Asn 210 215 220	672
tac aat ctc tgc cac atg cga acg atc cag tgg tcg gag att gta tcc Tyr Asn Leu Cys His Met Arg Thr Ile Gln Trp Ser Glu Ile Val Ser 225 230 235 240	720
aac ggc acg gat gca tac tac aac tac gac ttt act gct ccg gag cgc Asn Gly Thr Asp Ala Tyr Tyr Asn Tyr Asp Phe Thr Ala Pro Glu Arg 245 250 255	768
gag tgt ccc aag tgc cac gag agc tgc acg cac gga tgt tgg ggc gag	816

Glu Cys Pro Lys Cys His Glu Ser Cys Thr His Gly Cys Trp Gly Glu	
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Gly Pro Lys Asn Cys Gln Lys Phe Ser Lys Leu Thr Cys Ser Pro Gln	
275 280 285	
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Cys Ala Gly Gly Arg Cys Tyr Gly Pro Lys Pro Arg Glu Cys Cys His	
290 295 300	
ctc ttc tgc gcc gga gga tgc act ggt ccc acg caa aag gat tgc atc	960
Leu Phe Cys Ala Gly Gly Cys Thr Gly Pro Thr Gln Lys Asp Cys Ile	
305 310 315 320	
gcc tgc aag aac ttc ttc gac gag gca gta tca aag gag gaa tgc ccg	1008
Ala Cys Lys Asn Phe Phe Asp Glu Ala Val Ser Lys Glu Glu Cys Pro	
325 330 335	
ccc atg cgc aag tac aat ccc acc acc tat gtt ctt gaa acg aat cct	1056
Pro Met Arg Lys Tyr Asn Pro Thr Thr Tyr Val Leu Glu Thr Asn Pro	
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Glu Gly Lys Tyr Ala Tyr Gly Ala Thr Cys Val Lys Glu Cys Pro Gly	
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cat ctg ttg cgg gat aat ggc gcc tgc gtg cgc agc tgt ccc cag gac	1152
His Leu Leu Arg Asp Asn Gly Ala Cys Val Arg Ser Cys Pro Gln Asp	
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Lys Met Asp Lys Gly Gly Glu Cys Val Pro Cys Asn Gly Pro Cys Pro	
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aaa acc tgc ccg ggc gtt act gtc ctg cat gcc ggc aac att gac tcg	1248
Lys Thr Cys Pro Gly Val Thr Val Leu His Ala Gly Asn Ile Asp Ser	
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Phe Arg Asn Cys Thr Val Ile Asp Gly Asn Ile Arg Ile Leu Asp Gln	
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Thr Phe Ser Gly Phe Gln Asp Val Tyr Ala Asn Tyr Thr Met Gly Pro	
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cga tac ata ccg ctg gat ccc gag cga cgg gag gtg ttc tcc acg gtg	1392
Arg Tyr Ile Pro Leu Asp Pro Glu Arg Arg Glu Val Phe Ser Thr Val	
450 455 460	
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Lys Glu Ile Thr Gly Tyr Leu Asn Ile Glu Gly Thr His Pro Gln Phe	
465 470 475 480	
cgg aat ctg tcg tac ttt cgc aat ctg gaa aca att cat ggc cgc cag	1488
Arg Asn Leu Ser Tyr Phe Arg Asn Leu Glu Thr Ile His Gly Arg Gln	

485										490					495					
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Leu	Met	Glu	Ser	Met	Phe	Ala	Ala	Leu	Ala	Ile	Val	Lys	Ser	Ser	Leu					
		500						505					510							
tac	agc	ctg	gag	atg	cgc	aat	ctg	aag	cag	att	agt	tcc	ggc	agt	gtg	1584				
Tyr	Ser	Leu	Glu	Met	Arg	Asn	Leu	Lys	Gln	Ile	Ser	Ser	Gly	Ser	Val					
		515					520					525								
gtc	atc	cag	cat	aat	aga	gac	ctc	tgc	tac	gta	agc	aat	atc	cgt	tgg	1632				
Val	Ile	Gln	His	Asn	Arg	Asp	Leu	Cys	Tyr	Val	Ser	Asn	Ile	Arg	Trp					
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ccg	gcc	att	cag	aag	gag	ccc	gaa	cag	aag	gtg	tgg	gtc	aac	gag	aat	1680				
Pro	Ala	Ile	Gln	Lys	Glu	Pro	Glu	Gln	Lys	Val	Trp	Val	Asn	Glu	Asn					
545					550					555					560					
ctc	agg	gcg	gat	cta	tgc	gag	aaa	aat	gga	acc	att	tgc	tcg	gat	cag	1728				
Leu	Arg	Ala	Asp	Leu	Cys	Glu	Lys	Asn	Gly	Thr	Ile	Cys	Ser	Asp	Gln					
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tgc	aac	gag	gac	ggc	tgc	tgg	gga	gct	ggc	acg	gat	cag	tgc	ctt	acc	1776				
Cys	Asn	Glu	Asp	Gly	Cys	Trp	Gly	Ala	Gly	Thr	Asp	Gln	Cys	Leu	Thr					
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tgc	aag	aac	ttc	aat	ttc	aat	ggc	acc	tgc	atc	gcc	gac	tgt	ggt	tat	1824				
Cys	Lys	Asn	Phe	Asn	Phe	Asn	Gly	Thr	Cys	Ile	Ala	Asp	Cys	Gly	Tyr					
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Ile	Ser	Asn	Ala	Tyr	Lys	Phe	Asp	Asn	Arg	Thr	Cys	Lys	Ile	Cys	His					
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cca	gag	tgc	cgg	act	tgc	aat	gga	gct	gga	gca	gat	cac	tgc	cag	gag	1920				
Pro	Glu	Cys	Arg	Thr	Cys	Asn	Gly	Ala	Gly	Ala	Asp	His	Cys	Gln	Glu					
625					630					635					640					
tgc	gtc	cat	gtg	agg	gac	ggt	cag	cac	tgt	gtg	tcc	gag	tgc	ccg	aag	1968				
Cys	Val	His	Val	Arg	Asp	Gly	Gln	His	Cys	Val	Ser	Glu	Cys	Pro	Lys					
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aac	aag	tac	aac	gat	cgt	ggt	gtc	tgc	cga	gag	tgc	cac	gcc	acc	tgc	2016				
Asn	Lys	Tyr	Asn	Asp	Arg	Gly	Val	Cys	Arg	Glu	Cys	His	Ala	Thr	Cys					
			660					665					670							
gat	gga	tgc	act	ggg	ccc	aag	gac	acc	atc	ggc	att	gga	gcg	tgt	acg	2064				
Asp	Gly	Cys	Thr	Gly	Pro	Lys	Asp	Thr	Ile	Gly	Ile	Gly	Ala	Cys	Thr					
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acg	tgc	aat	ttg	gcc	att	atc	aac	aat	gac	gcc	aca	gta	aaa	cgc	tgc	2112				
Thr	Cys	Asn	Leu	Ala	Ile	Ile	Asn	Asn	Asp	Ala	Thr	Val	Lys	Arg	Cys					
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ctg	ctg	aag	gac	gac	aag	tgc	ccc	gat	ggg	tat	ttc	tgg	gag	tat	gtg	2160				
Leu	Leu	Lys	Asp	Asp	Lys	Cys	Pro	Asp	Gly	Tyr	Phe	Trp	Glu	Tyr	Val					
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His Pro Gln Glu Gln Gly Ser Leu Lys Pro Leu Ala Gly Arg Ala Val	
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Cys Arg Lys Cys His Pro Leu Cys Glu Leu Cys Thr Asn Tyr Gly Tyr	
740 745 750	
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His Glu Gln Val Cys Ser Lys Cys Thr His Tyr Lys Arg Arg Glu Gln	
755 760 765	
tgc gag acc gag tgt ccg gcc gat cac tac acg gat gag gag cag cgc	2352
Cys Glu Thr Glu Cys Pro Ala Asp His Tyr Thr Asp Glu Glu Gln Arg	
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Glu Cys Phe Gln Arg His Pro Glu Cys Asn Gly Cys Thr Gly Pro Gly	
785 790 795 800	
gcc gac gat tgc aag tct tgc cgc aac ttt aag ttg ttc gac gcg aat	2448
Ala Asp Asp Cys Lys Ser Cys Arg Asn Phe Lys Leu Phe Asp Ala Asn	
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gag acg ggt ccc tat gtg aac tcc acg atg ttc aat tgc acc tcg aag	2496
Glu Thr Gly Pro Tyr Val Asn Ser Thr Met Phe Asn Cys Thr Ser Lys	
820 825 830	
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Cys Pro Leu Glu Met Arg His Val Asn Tyr Gln Tyr Thr Ala Ile Gly	
835 840 845	
ccc tac tgc gca gct agt ccg ccg agg agc agc aag ata act gcc aat	2592
Pro Tyr Cys Ala Ala Ser Pro Pro Arg Ser Ser Lys Ile Thr Ala Asn	
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Leu Asp Val Asn Met Ile Phe Ile Ile Thr Gly Ala Val Leu Val Pro	
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acg atc tgc atc ctc tgc gtg gtc aca tac att tgt cgg caa aag caa	2688
Thr Ile Cys Ile Leu Cys Val Val Thr Tyr Ile Cys Arg Gln Lys Gln	
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Lys Ala Lys Lys Glu Thr Val Lys Met Thr Met Ala Leu Ser Gly Cys	
900 905 910	
gag gat tcc gag ccg ctg cgt ccc tcg aac att gga gcc aac cta tgc	2784
Glu Asp Ser Glu Pro Leu Arg Pro Ser Asn Ile Gly Ala Asn Leu Cys	
915 920 925	
aag ttg cgc att gtc aag gac gcc gag ttg cgc aag ggc gga gtc ctt	2832
Lys Leu Arg Ile Val Lys Asp Ala Glu Leu Arg Lys Gly Gly Val Leu	
930 935 940	

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ggt gag aac gtc aag att cca gtg gcc att aag gag ctg ctc aag tcc Gly Glu Asn Val Lys Ile Pro Val Ala Ile Lys Glu Leu Leu Lys Ser 965 970 975	2928
aca ggc gcc gag tca agc gaa gag ttc ctc cgc gaa gcc tac atc atg Thr Gly Ala Glu Ser Ser Glu Glu Phe Leu Arg Glu Ala Tyr Ile Met 980 985 990	2976
gcc tct gag gag cac gtt aat ctg ctg aag ctc ctg gcc gtg tgc atg Ala Ser Glu Glu His Val Asn Leu Leu Lys Leu Leu Ala Val Cys Met 995 1000 1005	3024
tcc tca caa atg atg cta atc acg caa ctg atg ccg ctt ggc tgc Ser Ser Gln Met Met Leu Ile Thr Gln Leu Met Pro Leu Gly Cys 1010 1015 1020	3069
ctg ttg gac tat gtg cga aat aac cgg gac aag atc ggc tct aag Leu Leu Asp Tyr Val Arg Asn Asn Arg Asp Lys Ile Gly Ser Lys 1025 1030 1035	3114
gct ctg ctc aac tgg agc acg caa atc gcc aag ggc atg tcg tat Ala Leu Leu Asn Trp Ser Thr Gln Ile Ala Lys Gly Met Ser Tyr 1040 1045 1050	3159
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ctg gag cag ccg gag att tgt tcg ctg gac att tac tgt aca ctg	3519



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Leu	Ser	Cys	Trp	His	Leu	Asp	Ala	Ala	Met	Arg	Pro	Thr	Phe	Lys											
1175						1180					1185														
cag	ctg	act	acg	gtc	ttt	gct	gag	ttc	gcc	aga	gat	ccg	ggg	cgc	3609										
Gln	Leu	Thr	Thr	Val	Phe	Ala	Glu	Phe	Ala	Arg	Asp	Pro	Gly	Arg											
1190						1195					1200														
tat	ctg	gcc	att	ccc	ggg	gataagttca cccggctgcc ggcttacacg								3657											
Tyr	Leu	Ala	Ile	Pro	Gly																				
1205																									
agt	caggatg	aga	aggatct	cat	ccgaaaa	ttggctcca	ccaccgatgg	gtccgaagcc	3717																
att	gcgaaac	ccgatgacta	cctgcaacc	aaggcagcac	ctggctcctag	tcacagaacc	3777																		
gact	gcacgg	atgagatgcc	caagctgaac	cgctactgca	aggatcctag	taacaagaat	3837																		
tcg	agtaccg	gagacgatga	gagggattcg	agtgcccg	gagtgggcgt	gggtaatctg	3897																		
cg	cctcgatc	taccagtcga	tgaggatgat	tatctgatgc	ccacttgcca	accgggtccc	3957																		
aaca	acaaca	acaacatgaa	taatcccaat	caaaacaata	tggcagctgt	gggcgtggct	4017																		
gcc	ggctaca	tggatctcat	cggagtgcc	gttagtgtgg	acaatccgga	gtatctgcta	4077																		
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<211> 1209

<212> PRT

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Asp Arg Tyr Ala Arg Gln Asn Asn Arg Gln Arg His Gln Asp Ile Asp  
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Arg Asp Arg Asp Arg Asp Arg Phe Leu Tyr Arg Ser Ser Ser Ala Gln  
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Asn Arg Gln Arg Gly Gly Ala Asn Phe Ala Leu Gly Leu Gly Ala Asn  
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Gly Val Thr Ile Pro Thr Ser Leu Glu Asp Lys Asn Lys Asn Glu Phe  
85 90 95

Val Lys Gly Lys Ile Cys Ile Gly Thr Lys Ser Arg Leu Ser Val Pro  
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Ser Asn Lys Glu His His Tyr Arg Asn Leu Arg Asp Arg Tyr Thr Asn  
115 120 125

Cys Thr Tyr Val Asp Gly Asn Leu Lys Leu Thr Trp Leu Pro Asn Glu  
130 135 140

Asn Leu Asp Leu Ser Phe Leu Asp Asn Ile Arg Glu Val Thr Gly Tyr  
145 150 155 160

Ile Leu Ile Ser His Val Asp Val Lys Lys Val Val Phe Pro Lys Leu  
165 170 175

Gln Ile Ile Arg Gly Arg Thr Leu Phe Ser Leu Ser Val Glu Glu Glu  
180 185 190

Lys Tyr Ala Leu Phe Val Thr Tyr Ser Lys Met Tyr Thr Leu Glu Ile  
195 200 205

Pro. Asp Leu Arg Asp Val Leu Asn Gly Gln Val Gly Phe His Asn Asn  
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Tyr Asn Leu Cys His Met Arg Thr Ile Gln Trp Ser Glu Ile Val Ser  
225 230 235 240

Asn Gly Thr Asp Ala Tyr Tyr Asn Tyr Asp Phe Thr Ala Pro Glu Arg  
245 250 255

Glu Cys Pro Lys Cys His Glu Ser Cys Thr His Gly Cys Trp Gly Glu  
260 265 270

Gly Pro Lys Asn Cys Gln Lys Phe Ser Lys Leu Thr Cys Ser Pro Gln  
275 280 285

Cys Ala Gly Gly Arg Cys Tyr Gly Pro Lys Pro Arg Glu Cys Cys His  
290 295 300

Leu Phe Cys Ala Gly Gly Cys Thr Gly Pro Thr Gln Lys Asp Cys Ile  
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Ala Cys Lys Asn Phe Phe Asp Glu Ala Val Ser Lys Glu Glu Cys Pro  
325 330 335

Pro Met Arg Lys Tyr Asn Pro Thr Thr Tyr Val Leu Glu Thr Asn Pro  
340 345 350

Glu Gly Lys Tyr Ala Tyr Gly Ala Thr Cys Val Lys Glu Cys Pro Gly  
355 360 365

His Leu Leu Arg Asp Asn Gly Ala Cys Val Arg Ser Cys Pro Gln Asp  
370 375 380

Lys Met Asp Lys Gly Gly Glu Cys Val Pro Cys Asn Gly Pro Cys Pro  
385 390 395 400

Lys Thr Cys Pro Gly Val Thr Val Leu His Ala Gly Asn Ile Asp Ser  
405 410 415

Phe Arg Asn Cys Thr Val Ile Asp Gly Asn Ile Arg Ile Leu Asp Gln  
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Thr Phe Ser Gly Phe Gln Asp Val Tyr Ala Asn Tyr Thr Met Gly Pro  
435 440 445

Arg Tyr Ile Pro Leu Asp Pro Glu Arg Arg Glu Val Phe Ser Thr Val  
450 455 460

Lys Glu Ile Thr Gly Tyr Leu Asn Ile Glu Gly Thr His Pro Gln Phe  
465 470 475 480

Arg Asn Leu Ser Tyr Phe Arg Asn Leu Glu Thr Ile His Gly Arg Gln

485

490

495

Leu Met Glu Ser Met Phe Ala Ala Leu Ala Ile Val Lys Ser Ser Leu  
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Tyr Ser Leu Glu Met Arg Asn Leu Lys Gln Ile Ser Ser Gly Ser Val  
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Val Ile Gln His Asn Arg Asp Leu Cys Tyr Val Ser Asn Ile Arg Trp  
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Pro Ala Ile Gln Lys Glu Pro Glu Gln Lys Val Trp Val Asn Glu Asn  
 545 550 555 560

Leu Arg Ala Asp Leu Cys Glu Lys Asn Gly Thr Ile Cys Ser Asp Gln  
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Cys Asn Glu Asp Gly Cys Trp Gly Ala Gly Thr Asp Gln Cys Leu Thr  
 580 585 590

Cys Lys Asn Phe Asn Phe Asn Gly Thr Cys Ile Ala Asp Cys Gly Tyr  
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Ile Ser Asn Ala Tyr Lys Phe Asp Asn Arg Thr Cys Lys Ile Cys His  
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Pro Glu Cys Arg Thr Cys Asn Gly Ala Gly Ala Asp His Cys Gln Glu  
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Cys Val His Val Arg Asp Gly Gln His Cys Val Ser Glu Cys Pro Lys  
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Asp Gly Cys Thr Gly Pro Lys Asp Thr Ile Gly Ile Gly Ala Cys Thr  
 675 680 685

Thr Cys Asn Leu Ala Ile Ile Asn Asn Asp Ala Thr Val Lys Arg Cys  
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Leu Leu Lys Asp Asp Lys Cys Pro Asp Gly Tyr Phe Trp Glu Tyr Val  
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His Pro Gln Glu Gln Gly Ser Leu Lys Pro Leu Ala Gly Arg Ala Val  
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Cys Arg Lys Cys His Pro Leu Cys Glu Leu Cys Thr Asn Tyr Gly Tyr  
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His Glu Gln Val Cys Ser Lys Cys Thr His Tyr Lys Arg Arg Glu Gln  
755 760 765

Cys Glu Thr Glu Cys Pro Ala Asp His Tyr Thr Asp Glu Glu Gln Arg  
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Glu Cys Phe Gln Arg His Pro Glu Cys Asn Gly Cys Thr Gly Pro Gly  
785 790 795 800

Ala Asp Asp Cys Lys Ser Cys Arg Asn Phe Lys Leu Phe Asp Ala Asn  
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Glu Thr Gly Pro Tyr Val Asn Ser Thr Met Phe Asn Cys Thr Ser Lys  
820 825 830

Cys Pro Leu Glu Met Arg His Val Asn Tyr Gln Tyr Thr Ala Ile Gly  
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Pro Tyr Cys Ala Ala Ser Pro Pro Arg Ser Ser Lys Ile Thr Ala Asn  
850 855 860

Leu Asp Val Asn Met Ile Phe Ile Ile Thr Gly Ala Val Leu Val Pro  
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Thr Ile Cys Ile Leu Cys Val Val Thr Tyr Ile Cys Arg Gln Lys Gln  
885 890 895

Lys Ala Lys Lys Glu Thr Val Lys Met Thr Met Ala Leu Ser Gly Cys  
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Glu Asp Ser Glu Pro Leu Arg Pro Ser Asn Ile Gly Ala Asn Leu Cys  
915 920 925

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930 935 940

Gly Met Gly Ala Phe Gly Arg Val Tyr Lys Gly Val Trp Val Pro Glu  
945 950 955 960

Gly Glu Asn Val Lys Ile Pro Val Ala Ile Lys Glu Leu Leu Lys Ser  
965 970 975

Thr Gly Ala Glu Ser Ser Glu Glu Phe Leu Arg Glu Ala Tyr Ile Met  
980 985 990

Ala Ser Glu Glu His Val Asn Leu Leu Lys Leu Leu Ala Val Cys Met  
995 1000 1005

Ser Ser Gln Met Met Leu Ile Thr Gln Leu Met Pro Leu Gly Cys  
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Leu Leu Asp Tyr Val Arg Asn Asn Arg Asp Lys Ile Gly Ser Lys  
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Val Leu Val Gln Thr Pro Ser Leu Val Lys Ile Thr Asp Phe Gly  
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Leu Ala Lys Leu Leu Ser Ser Asp Ser Asn Glu Tyr Lys Ala Ala  
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Gly Gly Lys Met Pro Ile Lys Trp Leu Ala Leu Glu Cys Ile Arg  
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Thr Ile Trp Glu Leu Leu Thr Phe Gly Gln Arg Pro His Glu Asn  
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Ile Pro Ala Lys Asp Ile Pro Asp Leu Ile Glu Val Gly Leu Lys  
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Leu Glu Gln Pro Glu Ile Cys Ser Leu Asp Ile Tyr Cys Thr Leu  
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Gly Ser Phe Cys Ala Thr Pro Glu Lys Lys Val Cys Gln Gly Ala Asn	
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aac aaa ctg act ctt ctg gga acg gtg gaa gac cat tat cag gtt ctg	144
Asn Lys Leu Thr Leu Leu Gly Thr Val Glu Asp His Tyr Gln Val Leu	
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ctc aga atg tac aga aac tgc act gtg gtt ctg gag aac ctg gaa att	192
Leu Arg Met Tyr Arg Asn Cys Thr Val Val Leu Glu Asn Leu Glu Ile	
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Thr His Ile Thr Glu Lys Tyr Asp Leu Ser Phe Leu Lys Ser Ile Gln	
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cct ctg gag aac ctg cgc atc att cgc gga cac tca ctt tat gaa gac Pro Leu Glu Asn Leu Arg Ile Ile Arg Gly His Ser Leu Tyr Glu Asp 100 105 110	336
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Cys Val Arg Thr Cys Ser Pro Gly Thr Tyr Glu Val Asp Glu Gly Gly	
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Ile Leu Ser Thr Thr Phe Arg Gly Asp Pro His Thr Asn Thr Ser Gly	
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Cys Ala Asn Gln Asn Ser Thr Cys Asn Glu Met Cys Thr Ala Asp Gly	
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Cys Trp Gly Pro Gly Pro Thr Met Cys Phe Gly Cys Glu His Tyr Ser	
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gtt att ctg gct ctt gga gtg gcc gtt ctc ctg cgc aga cgc cac atc Val Ile Leu Ala Leu Gly Val Ala Val Leu Leu Arg Arg Arg His Ile 660 665 670			2016
cgg agg aag agg act ctg aga cga ctc ctg caa gag aga gag ctt gtg Arg Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg Glu Leu Val 675 680 685			2064
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Leu Arg Met Tyr Arg Asn Cys Thr Val Val Leu Glu Asn Leu Glu Ile  
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Thr His Ile Thr Glu Lys Tyr Asp Leu Ser Phe Leu Lys Ser Ile Gln  
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Pro Leu Glu Asn Leu Arg Ile Ile Arg Gly His Ser Leu Tyr Glu Asp  
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Lys Phe Ala Leu Ala Val Leu Val Asn Phe Asn Asn Ser Ile Glu Gln  
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His Asn Ile Ser Tyr Gly Lys Asn Cys Gly Lys Cys Asp Pro Ser Cys

180

185

190

Phe Asn Gly Ser Cys Trp Gly Thr Gly Pro Asp Lys Cys Gln Arg Met  
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Ile Leu Ser Thr Thr Phe Arg Gly Asp Pro His Thr Asn Thr Ser Gly  
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1085

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